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I. REPORT HUMBER

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG HUMBER

4. TITLE (and Subtitle)

Phase I Inspection Report

Little Choconut Watershed Site 2E Dam

Susquehanna River Basin, Broome County, N.Y.

Inventory No. 723

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National Dam Safety Program

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Dam Safety National Dam Safety Program

Visual Inspection Hydrology, Structural Stability Little Choconut Watershed Site 2E Dam Broome County Susquehanna River Basin

10. ARS TAXCT (Continue on receive side of management and Identity by black comber)

This campet provides information and analysis on the physical condition of the dam as of the report data. Information and analytic are based on visual inspection of the dam by the performing organization.

Examination of available documents and a visual inspection of the dam did not reveal conditions which constitute an immediate hazard to haman life or property. However, the dam has some minor doff ciencies, which need to be remedied.

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Hydrologic/hydraulic analyses performed in accordance with the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams indicate that the principal spillway and the emergency spillway would pass 100 percent of the outflow from the Probable Maximum Flood (PMF) without overtopping the dam. Therefore, the combined spillway capacity is adjudged to be adequate.

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test Flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM LITTLE CHOCONUT WATERSHED SITE 2E DAM INVENTORY NO. NY 723 SUSQUEHANNA RIVER BASIN BROOME COUNTY, NEW YORK

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PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM

Name of Dam: Little Choconut Watershed Site 2E Dam

State Located: New York

County: Broome

Watershed: Susquehanna River Basin

Stream: Unnamed Tributary of Little Choconut Creek

Date of Inspection: December 15, 1980

ASSESSMENT

Examination of available documents and a visual inspection of the dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some minor deficiencies which need to be remedied.

Hydrologic/hydraulic analyses performed in accordance with the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams indicate that the principal spillway and the emergency spillway would pass 100 percent of the outflow from the Probable Maximum Flood (PMF) without overtopping the dam. Therefore, the combined spillway capacity is adjudged to be adequate.

The dam has only minor deficiencies. The following corrective measures should be completed within 12 months from the final approval date of this report:

- Repair the small eroded area on the downstream slope at the right abutment using granular fill and broken stone to permit drainage.
- Mow the grassed slopes of the embankment and emergency spillway channel at least annually.
- 3. Restore the riprap support or shorten the toe drain outlet pipes.
- 4. Control access and vehicular traffic and take necessary measures to prevent further rutting of the crest.

In the interim, a detailed flood warning and emergency evacuation plan should be developed and implemented to alert the public in the event conditions occur which could result in failure of the dam.

Submitted by:

FLAHERTY GIAVARA ASSOCIATES, P.C.

Hugh C. Flaherty, P.E. & L.S. Chairman of the Board, New York Liceuse No. 58508

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Approved by:

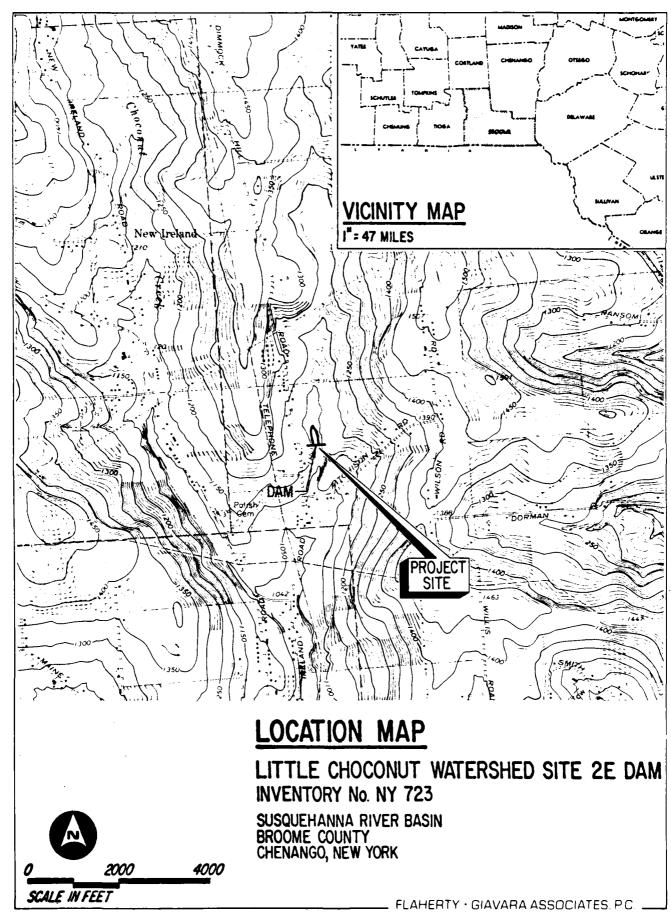
Colonel W. M. Smith Jr. New York District Engineer

30 JUN 1981

Date:



PHOTO #1: Overview of Little Choconut Watershed Site 2E Dam Inventory No. NY 725



NATIONAL DAM SAFETY PROGRAM
PHASE I INSPECTION REPORT
LITTLE CHOCONUT WATERSHED SITE 2E DAM
INVENTORY NO. NY 723
D.E.C. NO. 96A-3623
SUSQUEHANNA RIVER BASIN
BROOME COUNTY, NEW YORK

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I Inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367. Flaherty Giavara Associates, P.C. has been retained by the New York District to inspect and report on selected dams in the State of New York. Authorization and notice to proceed was issued to Flaherty Giavara Associates, P.C. under a letter of December 24, 1980 from W. M. Smith, Jr., Colonel, Corps of Engineers. Contract No. DACW 51-81-C-0006 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection

Evaluation of the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to life and property and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Little Choconout Watershed Site 2E Dam consists of an earthen embankment with a concrete pipe principal spill-way under the center of the embankment and a vegetated emergency spillway channel around the left abutment. It is one of eight floodwater retarding dams in the Little Choconut, Finch Hollow, and Trout Brook watersheds designed to reduce floodwater damages. Plans, profiles and sections prepared for the project by the U.S. Department of Agriculture, Soil Conservation Service (SCS) are shown on drawings in Appendix F.

The dam embankment is approximately 410 feet long, 58 feet high and has an upstream slope of 3 horizontal to 1 vertical and a downstream slope of 2.5 to 1. The crest of

the dam is 16 feet in width and its elevation varies from 1161.8 to 1163.3 (NGVD). There is a 10 foot wide berm at the toe of the upstream slope just below normal pond level. The embankment has a homogeneous cross section of compacted glacial till. A 12 to 18 foot wide cutoff also of compacted glacial till extends 4 to 10 feet below the original ground surface. The cutoff extends into glacial till under the abutment slopes and floodplain. The upstream and downstream slopes are provided with grass cover (crown vetch) for erosion protection. Riprap is in place around the principal spillway outlet. The embankment has an internal drain constructed in pervious fill near the downstream toe extending for about half its length. An 8 inch diameter perforated bituminous-coated corrugated metal pipe is embedded in the drain fill on either side of the principal spillway outlet, with each pipe discharging adjacent to the spillway pipe outlet.

The principal spillway is a drop inlet structure consisting of a reinforced conrete riser, a 30 inch diameter prestressed concrete cylinder pipe (PCCP), and a circular plunge pool to dissipate energy at the outlet end of the conduit.

The emergency spillway is a curved 120 foot wide channel with 3 to 1 side slopes cut into the earth of the left abutment sidehill. It is 680 feet long, and terminates at a steep earthen slope leading down to the original floodplain and stream channel. The emergency spillway slopes gently downward both upstream and downstream from a 30 foot wide level section (the spillway crest) that is close to the left end of the dam crest. Approximately 150 feet of the right channel slope is formed by a spur dike which has a 12 foot wide crest that varies in elevation from 1157.3 to 1161.8 (NGVD). It connects to the left end of the dam embankment and has a grass covered channel bottom and side slopes.

b. Location

The Little Choconut Watershed Site 2E Dam is located off Dimmock Hill Road approximately 1.7 miles north of Choconut Center in the Town of Chenango, New York. The dam is located at latitude north 42°-10.0' and longitude west 75°-56.3' on the U.S. Geological Survey 7.5 minute series topographic map "Castle Creek, New York". The Location Map on page i indicates where the dam is situated.

c. Size Classification

The maximum height of the dam is 58 feet and the maximum storage capacity is 179 acre-feet. Therefore, Little

Choconut Watershed Site 2E Dam is classified as an "Intermediate" dam as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. <u>Hazard Classification</u>

There are approxiamtely 7 dwellings within the dam failure flood hazard area. Aitchison Road and Stella Ireland Road are located downstream of the dam. Therefore, the dam is in the High Hazard category as defined by the Recommended Guidelines for Safety Inspection of Dams.

e. Ownership

The dam is owned by the County of Broome and maintained by the Broome County Soil & Water Conservation District. Their addresses and telephone numbers are as follows:

<u>Owner</u>

Contact: Carl S. Young, Broome County Executive

Broome County Building

Government Plaza P.O. Box 1766

Binghamton, New York 13902

Telephone: (607) 772-2109

Maintenance

Contact: William Maxian, District Manager

Broome County Soil & Water Conservation

District

840 Front Street

Binghamton, New York 13905

Telephone: (607) 773-2691

f. Purpose

The primary purpose of this dam is flood control in the Little Choconut Creek watershed to reduce floodwater damages.

g. Design and Construction History

This dam was designed by the Soil Conservation Service (SCS) of the U.S. Department of Agriculture (USDA) in 1965 and 1966. It was constructed in 1968 by the Talson Construction Company of Herkimer, New York. No major post construction modifications have been made to the dam.

h. Normal Operating Procedures

The intake riser is always open; therefore, the water level is maintained at the elevation of the crest of the intake orifice for normal flows. There are no regular operating procedures.

1.3 PERTINENT DATA

a.	Drainage Area (Square Miles)	1.02
ъ.	Discharge at Dam Site (CFS)	
	 Top of Dam Crest of Emergency Spillway Crest of Principal Spillway Reservoir Drain Inlet 	3410 32 2
c.	Elevations (NGVD)	
	 Top of Dam Design High Water Level Crest of Emergency Spillway Crest of Principal Spillway Reservoir Drain Inlet 	1161.8 1158.9 1156.9 1131.5 1122.5
d.	Reservoir Surface Area (Acres)	
	 Top of Dam Design High Water Level Crest of Emergency Spillway Crest of Principal Spillway 	17.7 15.5 13.9 1.2
е.	Storage (Acre-Feet)	
	 Top of Dam Design High Water Level Crest of Emergency Spillway Crest of Principal Spillway 	227 179 150 4
f.	<u>Dam</u>	
	 Type: Homogeneous compacted earthfill with a glacial till cutoff Length (Feet) Upstream Slope (H:V) Downstream Slope (H:V) Crest Width (Feet) 	410 3:1 2.5:1 16

g. Emergency Spillway

- Type: Excavated earthen channel; right bank is part of spur dike

- Length (Feet)	680
- Bottom Width (Feet)	120
- Side Slopes (H:V)	3:1
- Channel Bottom Slopes (Feet/Foot)	
upstream	0.020
downstream	0.032

h. Principal Spillway

- Type: Drop inlet structure consisting of a single stage reinforced concrete riser, a 30 inch diameter prestressed concrete cylinder pipe (254 feet long) and a circular plunge pool at the outlet end of the conduit

- Control: None

i. Reservoir Drain

- Type: 6 inch diameter cast iron mechanical joint pipe (53 feet long) with a trash rack and concrete pad and draining into the reinforced concrete riser

- Control: 6 inch flat frame slide gate gate located at the inlet to the reinforced concrete riser

j. Toe Drain

- Type: Two 8 inch diameter perforated bituminous-coated corrugated metal pipes in pervious fill

- Control: None

SECTION 2 - ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The Little Choconut Watershed Site 2E Dam is located in the Appalachian Plateau physiographic province of New York State. The glacial ice that modified the topography drastically in some areas of this state had little effect on this section. The ice sheet terminated approximately 40 miles south of Binghamton; therefore, it was relatively thin in this area.

Relief ranges from an elevation of 800 feet in the Susquehanna River valley to more than 1500 feet in the vicinity of this site. In many localized areas, the creation of late-stage glacial lakes resulted in substantial filling of valleys with lacustrine deposits and a decrease in relief.

The geologic history of this site appears to be one of glacial scour of the north-south oriented valley, with subsequent deposition of till uniformly over the entire site area. Two distinct tills are logged in the drill holes, on a color basis. This may represent evidence of multiple glaciation of this site. Postglacial erosion has incised a rather steep gradient, V-shaped valley into this till.

b. Subsurface Investigations

1. Centerline of Dam

Both abutments of this site are a dense glacial till to an unknown depth. The floodplain of this site generally consists of 4 to 5 feet of reworked till, underlain by a sequence of gray and brown dense tills.

A pocket of heavy, bouldery gravel exists in the vicinity of TP (test pit) 4 and DH (drill hole) 51 (See Appendix F - Profiles). This material extends down to a depth of 9 feet and is underlain gray till.

Permeable materials exist on the surface of this floodplain to a depth of about 4 feet and also below a depth of 23 feet. Only moderate seepage was encountered in the surface gravels at the time of the investigation.

Slight artesian pressure was encountered in the zone of gravel at the 23 and 28 foot depths. Water rose in the casing to a height of approximately 4 to 5 feet above ground level and maintained a minimal flow.

2. Principal Spillway

The entire length of the principal spillway is quite uniformly underlain by 4 to 5 feet of reworked till. Beneath this material, a blue-gray dense till was logged to an average depth of 16 feet, and then a third zone of the gray-brown sequence mentioned in the centerline of dam narrative was encountered.

3. Emergency Spillway

The emergency spillway excavation, as well as most of the entire hillside, is a fairly uniform glacial-till. The only variations that occur in this till consist of zones where slightly more material larger than 6 inches in diameter was encountered, or where sandy streaks existed near the bottom of the test pits. Minor seepage was noted in some of these sandy zones.

2.2 DESIGN RECORDS

This dam was designed by the SCS in 1965 and 1966. As part of the design process, a design report, a geology report and soils testing were completed for this site. This data is included in Appendix D.

2.3 CONSTRUCTION RECORDS

The dam was constructed in 1968 by the Talson Construction Company of Herkimer, New York. The contract drawings which were prepared have been updated to reflect "As-Built" conditions and are included in Appendix F. In addition, detailed records kept by the SCS during construction are available at their office in Syracuse, New York.

2.4 OPERATION RECORDS

There were no operation records available for this dam.

2.5 EVALUATION OF DATA

The data presented herein was obtained primarily from the SCS office located in Syracuse, New York and also from the files of the New York State Department of Environmental Conservation (DEC). This information appears to be reliable and adequate for the purposes of a Phase I Inspection Report.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Little Choconut Watershed Site 2E Dam was conducted on December 15, 1980. The weather was hazy and the temperature was approximately $20\pm^{0}F$. At the time of this inspection, there was approximately 2 inches of snow on the ground, and water was flowing in the principal spillay outlet pipe (See Photo No. 11).

b. Dam

The earthfill embankment of the dam is generally in good condition. There was no visible evidence of settlement, lateral movement, major seepage or erosion, or other serious defects.

The following specific items were noted:

- 1. There is a small area of slight erosion into glacial till along the lower part of the contact between the downstream embankment slope and the right abutment. Very slight seepage was evident at approximately the same elevation as the water in the storage pool (See Photo No. 13).
- 2. The grass has been cut short on the relatively level surfaces, but is about 18 inches high on the embankment and cut slopes (See Photos No. 2, 3, 4, 5, 6, 7 and 8). However, the absence of brush is indicative of past periodic cutting.
- 3. Toe drain outlet pipes on either side of principal spillway outlet pipe project unsupported for about 5 feet, and have been bent slightly downward (See Photo No. 10).
- 4. The gate was open and apparently traffic has worn slight ruts along the crest (See Photo No. 3).
- 5. A small quantity of broken rock was evident at the contact between the upstream embankment slope and the left abutment. This may indicate past erosion.
- 6. A few animal burrows were noted in the steep slope of the emergency spillway where it discharges to the floodplain below (See Photo No. 14).

c. Principal Spillway

1. Drop Inlet Structure

The reinforced concrete drop inlet structure is in excellent condition. However, there was a moderate amount of debris on and in front of the metal trash rack (See Photo No. 9). The gate stem for the low level drain was observed but not operated during the inspection.

2. Principal Spillway Conduit

The visible portions of the interior of the prestressed concrete cylinder pipe was in good condition. The exterior surface of the pipe has numerous cracks as shown in Photo No. 11 and the loss of concrete at the end of the pipe has exposed the prestressed steel strands which are rusting. The cast-in-place concrete cradle that supports the cantilevered discharge pipe is in good condition.

3. Principal Spillway Outlet

The projecting end of the conduit discharges into a 30+ foot diameter plunge pool just beyond the toe of the downstream embankment (See Photo No. 10). The riprap lining within the plunge pool appeared to be in good condition where visible. The bottom was not visible due to deep water. A tree trunk lying across the outlet from the plunge pool could obstruct flows at moderate stages.

4. Principal Spillway Discharge Channel

The channel downstream from the plunge pool has a typical width of 4 feet. The bed and banks are partially covered with a layer of cobbles, and are overgrown with shrubs. The west side of the channel has had some bank erosion about 100 feet downstream of the plunge pool (See Photo No. 12).

d. Emergency Spillway

The emergency spillway is 120 feet wide and is located on the left abutment. It has a vegetated surface consisting of 6 inch high grass. The approach channel, level crest, and exit channel are generally in good condition (See Photos No. 6, 7 and 8). The grass cover on the spillway and along the crest of the earth dike separating the spillway from the embankment has been disturbed in several areas by footpaths and motor vehicles. The crest of the spillway and bottom of the exit channel appear to

be convex along their widths and would tend to concentrate flow along the edges.

e. Downstream Channel

The downstream channel is in good condition, with no signs of degradation or aggradation (See Photo No. 12).

f. Reservoir - Storage Pool Area

The floodwater storage area is bordered by gently to moderately sloping fields and wooded areas, with local steep slopes close to the upstream face of the dam (See Photo No. 15). There is no significant probability of landslides into the storage pool affecting the safety of the dam. Sedimentation is not a factor with regard to safety because of the low normal pool level.

3.2 EVALUATION OF OBSERVATIONS

The visual inspection revealed some minor deficiencies. The following observations were made:

- a. Slight erosion was observed on the downstream embankment slope at the right abutment.
- b. The grass was cut short on the relatively level surfaces, but it is about $18\pm$ inches high on the embankment and cut slopes.
- c. Toe drain pipes discharging on either side of the principal spillway outlet pipe project unsupported for about 5 feet.
- d. The gate was open and apparently traffic has worn slight ruts along the crest.
- e. The exterior surface of the principal spillway conduit has numerous cracks and the loss of concrete at the end of the pipe has exposed the prestressed steel strands which are rusting.
- f. A small quantity of broken rock was evident at the contact between the upstream embankment slope and the left abutment.
- g. Debris was observed on the trash rack at the orifice of the principal spillway concrete riser.
- h. A few small animal burrows were noted in the steep slope at the exit to the emergency spillway.

Based on the visual examination conducted on December 15, 1980, the Little Choconut Watershed Site 2E Dam is considered to be in good condition. The minor deficiencies which have been observed should not have a serious effect on the performance or the safety of the structure.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The normal water surface level is maintained by the orifice of the drop inlet structure at elevation 1131.5 (NGVD). No operational procedures are in effect at this time.

4.2 MAINTENANCE OF DAM

The dam is maintained by the Broome County Soil & Water Conservation District. Presently the following yearly maintenance items are performed:

- a. Mowing the dam crest and the bottom of the emergency spillway channel; however, the mowing of the slopes of the embankment and emergency spillway is only done every three years.
- b. Maintenance of riprap.
- c. Maintenance of the trash rack on the drop inlet structure.
- d. Inspection of concrete and pipes.
- e. Inspection of the dam embankment for seepage.
- f. Operation of the gate used to drain the impoundment.
- g. Repairs to fences and roads are made as necessary.

4.3 WARNING SYSTEM

No warning system is now in effect; however, the Broome County Soil & Water Conservation District is in the process of preparing an emergency action plan and warning system for the dam to be implemented in the event of dam failure.

4.4. EVALUATION

The operation and maintenance procedures of the dam and appurtenances are satisfactory. However, increased maintenance efforts are required to correct the minor deficiencies noted.

SECTION 5 - HYROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA

The dam is located on an unnamed tributary 4700+ feet upstream of Little Choconut Creek. This unnamed tributary joins Little Choconut Creek near Choconut Center, approximately four miles upstream of the Susquehanna River at Johnson City, New York.

The watershed (shown on the Watershed Map in Appendix C) consists of 653 acres (1.02 square miles) of rolling to hilly uplands with typical slopes of 10 percent. Land use within the watershed is largely undeveloped with extensive open fields and woodlands. There is a $30\pm$ acre swamp located upstream of the dam in the center of the watershed.

The watercourse upon which the dam is located is a small perennial stream with a typical flow width of 10 feet and a typical flow depth of 6 inches.

5.2 ANALYSIS CRITERIA

The purpose of the hydrologic/hydraulic analysis is to evaluate the spillway capacity and the potential for overtopping. The analysis of the spillway capacity of the dam and storage of the reservoir was performed using the Corps of Engineers HEC-1 Computer Model - Dam Safety Version. The procedure included determining the Probable Maximum Flood (PMF) runoff from the watershed and routing the inflow hydrograph through the impoundment to determine the outflow hydrograph. The unit hydrograph was defined by the Snyder Synthetic Unit Hydrograph method and the modified Puls routing procedure was incorporated. The initial rainfall loss was assumed to be 1.0 inches, and the uniform rainfall loss was assumed to be 0.1 inches per hour.

In accordance with recommended guidelines of the Corps of Engineers the Probable Maximum Precipitation (PMP) was 23.5 inches (6 hour duration, 10 square mile area).

The analysis was conducted for both the full PMF and for several fractional PMF conditions. The PMF inflow of 2518 CFS was routed through the reservoir and the peak outflow was determined to be 2482 CFS.

5.3 SPILLWAY CAPACITY

The total outlet capacity is the sum of discharges from the principal spillway and the emergency spillway.

The principal spillway consists of a drop inlet structure, conduit and plunge pool. Its flow capacity was evaluated as-

suming that its capacity was controlled by the inlet elevation 1131.5 (NGVD), which acts as an orifice when submerged by water stages more than one foot above its invert. The area of the orifice is 1.2 square feet, the coefficient of discharge is 0.6, and the centerline elevation is 1132.0 (NGVD).

The emergency spillway is a 120 foot wide, trapezoidalshaped vegetated channel. The SCS design information indicates the emergency spillway was designed to be used only by a flood event with an average return frequency of more than 100 years.

The stage discharge curve for the combined principal and emergency spillways was obtained from the Soil Conservation Service design report for the stages above and including elevation 1156.9 (NGVD).

Stage (Feet)	Discharge Capacity (CFS)	Element of Structure
1131.5	0	Sediment Pool
1135.0	11.1	
1140.0	18.1	~-
1145.0	23.1	
1150.0	27.1	
1156.9	31.9	Emergency Spillway
	-	Crest
1158.9	750	Design High Water
	, -	Level
1161.8	3410	Top of Dam

The total spillway capacity at the top of dam is 3410 CFS.

The principal spillway can pass approximately 18 percent of the PMF event before use of the vegetated emergency spillway would be required.

The energy grade line of the PMF discharge would be 3.9 feet above the crest of the emergency spillway. The average flow velocity in the emergency spillway discharge channel would be 10.6 feet per second (FPS).

5.4 RESERVOIR CAPACITY

The storage capacity of the reservoir was obtained from the Soil Conservation Service design report, as indicated below:

Stage	Storage	Storage
(Feet)	(Acre-Feet)	(Inches of runoff)
1131.5 1156.9	4 150	0.08

1158.9	179	3.29
1161.8	227	4.17

5.5 FLOODS OF RECORD

The maximum floods of record for this dam are summarized below:

<u>Date</u>	<u> Event</u>	Maximum Flood Stage Elevation (NGVD)	Feet Below Crest of Emergency Spillway (El. 1156.9)
6/24/72	Hurricane	1148.5	8.4
9/26/75	Agnes Hurricane	1148.3	8.6
2/24/75	Eloise 	1142.4	14.5

It should be noted that floodwaters have never reached the emergency spillway crest.

5.6 OVERTOPPING POTENTIAL

The results of the HEC-1 DB computer analysis indicate that the crest of the dam is not overtopped by the PMF event. The peak discharge rate of 2482 CFS would occur at a peak flood stage of 1160.8 feet, which is 1.0 feet below the crest of the dam.

The results of the analysis are tabulated below:

Flood Condition	Peak Inflow (CFS)	Peak Outflow (CFS)	Maximum Stage Elevation (NGVD)
0.5 PMF	1259	1241	1159.4
1.0 PMF	2518	2482	1160.8

5.7 EVALUATION

Using the Corps of Engineers' screening criteria for the initial review of spillway adequacy, it has been determined that the dam would not be overtopped by either the full Probable Maximum Flood (PMF) of one half the PMF. Approximately 1.0 feet of freeboard would exist between the PMF maximum water level and the crest of the dam. Therefore, the spillway is adjudged to be adequate.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

There was no visible evidence of settlement, lateral movement or other signs of structural instability of the dam during the site inspection. However, the pool level was approximately 30 feet below the top of the dam at the time, with the result that the forces tending to cause instability were much lower than design levels. Based on the conditions that were observed, there is no reason to question the static structural stability of the dam.

b. Design and Construction Data

Soil Conservation Service record drawings for the Little Choconut Watershed Site 2E Dam (see Appendix F) show a configuration and cross section for the embankment that generally corresponds to the information presented and analyzed in the SCS Geology Report, dated February 1966; Memorandum presenting test results and stability analyses, dated May 6, 1966; and Design Report, dated October 1966.

While there is no construction data available to confirm the actual physical properties of the earthfill in the embankment, the design properties presented in the SCS reports are considered to be reasonable, and the dam would be expected to have adequate safety margins with respect to stability under static loading conditions. Additionally, the toe drains control the phreatic surface and provide a safe outlet for foundation seepage.

A slope stability analysis was performed by the SCS on the embankment of the dam using the Swedish Circle method and adopted design data (See page D-7 of Appendix D). The results of the analysis are tabulated below:

Location	Slope (H:V)	Conditions	Factor of Safety
Upstream slope	3:1	Full drawdown; 10' berm; radius = 158.5 feet	1.64
Upstream slope	3:1	Full drawdown; 10' berm; radius = 113.0 feet	1.58
Upstream slope	3:1	Full drawdown; 10' berm; radius = 77.0 feet	1.54
Downstream slope	2.5:1	No berm; drain @ c/b=0.6; radius = 68.0 feet	1.70

Downstream 2.5:1 No berm; drain @ c/b=0.6; 1.56 radius = 101.0 feet

Downstream 2.5:1 No berm; drain @ c/b=0.6; 1.71 slope radius = 142.5 feet

The assumptions and method used are considered reasonable; therefore, the resulting factors of safety are adequate.

c. Seismic Stability

The Little Choconut Watershed Site 2E Dam is located in Seismic Zone 1, and in accordance with recommended Phase I guidelines does not require seismic analysis.

SECTION 7 - ASSESSMENTS/RECOMMENDATIONS

7.1 DAM ASSESSMENT

a. Condition

On the basis of the visual examination, the Little Choconut Watershed Site 2E Dam is considered to be in good condition. There were no signs of impending structural failure or other conditions which would warrant urgent remedial action, and only minor deficiencies were noted.

b. Adequacy of Information

The evaluation of this dam is based primarily on visual examination, reference to available SCS plans, approximate hydraulic and hydrologic computations, and application of engineering judgement. The visual examination was somewhat hampered by low pool level and light snow cover; however, the available information that was obtained was adequate for the purposes of a Phase I assessment.

c. Need for Additional Investigations

No additional investigations are required for this dam.

d. <u>Urgency</u>

The recommended measures presented in Section 7.2 should be completed within 12 months of the final approval date of this report. In the interim, a detailed flood warning and emergency evacuation plan should be developed and implemented.

7.2 RECOMMENDED MEASURES

Although the dam is generally in good condition, it is considered important that the following items be accomplished:

- 1. Repair the small eroded area on the downstream slope at the right abutment using granular fill and broken stone to permit drainage.
- 2. Mow the grassed slopes of the embankment and emergency spillway channel at least annually.
- 3. Restore the riprap support or shorten the toe drain outlet pipes.
- 4. Control access and vehicular traffic and take necessary measures to prevent further rutting of the crest.

APPENDIX A

PHOTOGRAPHS

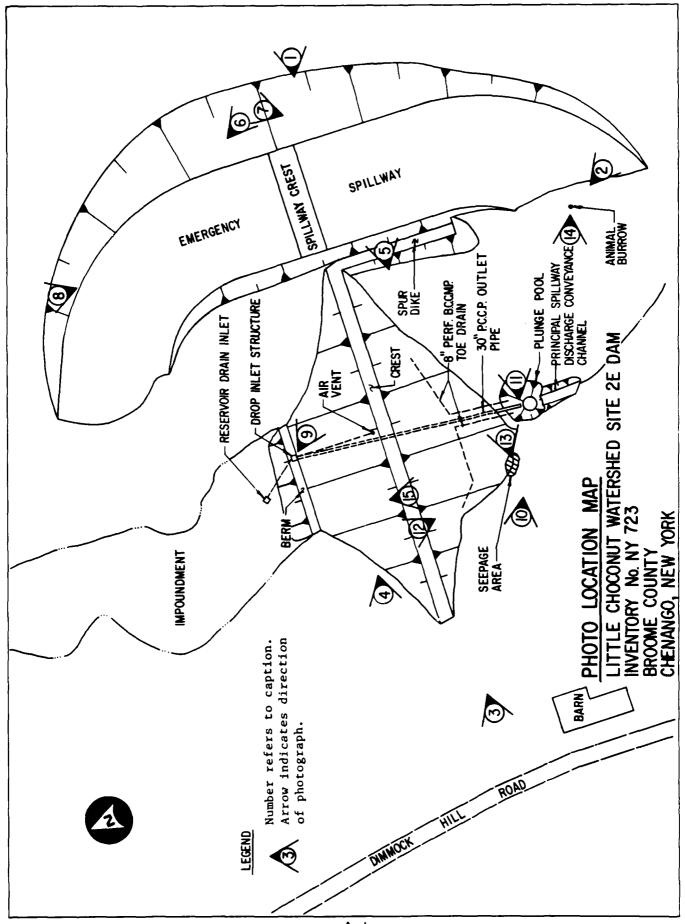




PHOTO #2: Overview of downstream face of dam



PHOTO #3: Crest of dam looking toward left abutment



PHOTO #4: Upstream face of dam



PHOTO #5: Downstream face of dam



PHOTO #6: Emergency spillway looking upstream

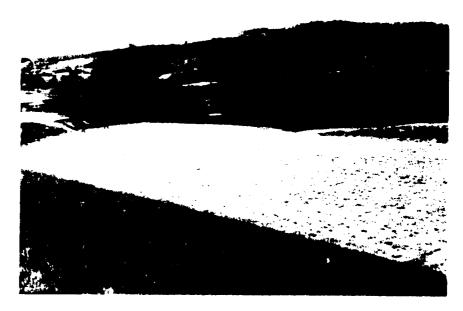


PHOTO #7: Emergency spillway looking downstream



PHOTO #8: Crest of emergency spillway looking downstream

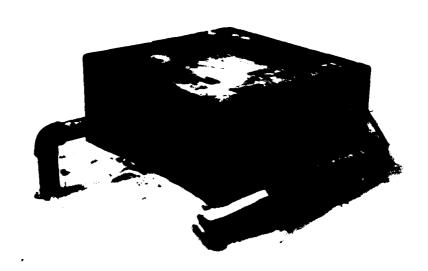


PHOTO #9: Drop inlet structure

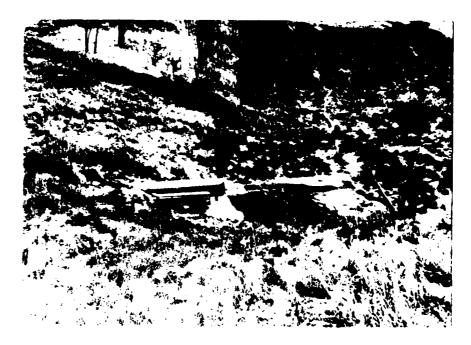


PHOTO #10: Outlet works: 30" prestressed concrete cylinder pipe (P.C.C.P.) and plunge pool



PHOTO #11: Cracks in 50" outlet pipe



PHOTO #12: Downstream channel conditions



PHOTO #13: Seepage Area



PHOTO #14: Animal burrow



PHOTO #15: Impoundment

APPENDIX B
VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1)	Basi	c Data

٠.	General							
	Name of Dam Little Choconut Watershed	Site 2E Dam						
	Fed. I.D. # NY 723	DEC Dam No. 96A-3623						
	River Basin Susquehanna							
	Location: Town Chenango	County Broome						
	Stream NameUnnamed							
	Tributary of . Little Choconut Creek							
	Latitude (N) 42°-10.0'	Longitude (W) 75°-56.3'						
	Type of Dam Earthen embankment							
	Hazard Category High	Hazard Category High						
	Date(s) of Inspection December 15, 1980							
	Weather Conditions Hazy, 20° ± F.	<u> </u>						
	Reservoir Level at Time of Inspection	Elevation 1131.5						
ь.	Inspection Personnel R.C. Smith, T.L.	Ward and J.G. MacBroom of Flaherty Giavara						
	Associates, P.C.; P.L. LeCount and J.J.	Rixner of Haley & Aldrich, Inc.; S. Dhawan						
c.	Persons Contacted (Including Address &	and L. Comrie of Salmon Associate Phone No.)						
	Gary L. Page	Donald W. Lake, Jr.						
	Binghamton Watershed Office	Soil Conservation Service						
	Soil Conservation Service P.O. Box 1255	771 Federal Building 100 South Clinton Street						
	Broome County Airport	Syracuse, N.Y. 13260						
	Binghamton, N.Y. 13902 (607) 773-2751	(315) 423–5505						
d.	History:							
	Date Constructed 1968 Date	e(s) Reconstructed Never						
	Designer Soil Conservation Service	,						
	Constructed By Talson Construction							
	Owner County of Broome							
	Owner							

2) Embankment

(1)	Embankment Material Fairly well-graded silty and clayey gravel
(2)	Cutoff Type Compacted glacial till
(3)	Impervious CoreNone
(4)	Internal Drainage System Two 8" perforated BCCMP toe drains on either
	side of the principal spillway outlet; no flow in either drain
(5)	Miscellaneous No comments
Cres	t .
(1)	Vertical Alignment
(2)	Horizontal Alignment Excellent; substantially straight
(3)	Surface Cracks None observed
(4)	Miscellaneous Minor wheel rutting; mowed grass
Upst	ream Slope
(1)	Slope (Estimate - V:H) 1:3
(0)	Undesirable Growth or Debris, Animal Burrows None observed
(2)	
(3)	Sloughing, Subsidence or Depressions Slight erosion at upstream

(4)	Slope Protection 18 [±] inch high grass
(5)	Surface Cracks or Movement at Toe None evident
Down	stream Slope
(1)	Slope (Estimate - V:H) 1:2.5
(2)	Undesirable Growth or Debris, Animal Burrows None observed
(3)	Sloughing, Subsidence or Depressions None evident
	Surface Creates or Movement at Tax None evident
(4)	Surface Cracks or Movement at Toe None evident
(5)	Seepage Minor seepage at the downstream junction of the embankment
	and the right abutment
(6)	External Drainage System (Ditches, Trenches, Blanket)
	None observed
(7)	Condition Around Outlet Structure Riprap surrounds the outlets of the
	principal spillway and the toe drains and has fallen away from both
	of them
(8)	Seepage Beyond Toe None observed
\- ,	
Abut	ments - Embankment Contact
Abut	ments - Embankment Contact Good condition

		(1)	Erosion at Contact None evident
		(2)	Seepage Along Contact None observed
3)	Dra	inage	System
	a.	Desc	ription of System Drop inlet structure consisting of a reinforced
		con	crete riser, a 30 inch diameter conduit and a plunge pool
	ъ.	Cond:	ition of SystemExcellent
	c.	Disci	narge from Drainage System Riprap-lined plunge pool
4)	Ins		ntation (Monumentation/Surveys, Observation Wells, Weirs, Peizometers, Etc.)
		Monum	entation of centerline of dam
			·

a.	Slopes Gently to moderately sloping fields and wooded areas with local
	steep slopes close to the upstream face of dam
b.	Sedimentation Design figures for storage allow for 10.9 acre-feet of
	sediment
c.	Unusual Conditions Which Affect Dam Low sediment pool level
Are	a Downstream of Dam
a.	Downstream Hazard (No. of Homes, Highways, etc.) Approximately 7 dwellings
	are within the dam failure flood hazard area as well as Aitchison Road
	and Stella Ireland Road
b.	Seepage, Unusual Growth None observed
c.	Evidence of Movement Beyond Toe of Dam None observed
d.	Condition of Downstream Channel Good; no aggradation or degradation
Spi	llway(s) (Including Discharge Conveyance Channel)
	Principal spillway, emergency spillway and discharge conveyance channel
a.	General Principal spillway and discharge conveyance channel handle normal
	flows, while the emergency spillway conveys flood events with average retur
	frequencies greater than 100 years
ъ.	Condition of Principal Spillway Good; however, debris has collected on
	the trash rack and would hinder flow through the orifice. Also, the
	exterior of the projecting outlet pipe has numerous cracks and the loss

nannel appear to Long the edges of Lon of Discharge d with a layer of Prain/Outlet Two Concrete X	be convex alo f the spillway Conveyance Ch f cobbles, and Conduit Me etal: 6 inch	annel Good; the the west side h	ne spillway crest and the and would tend to concentrate bed and banks are partial has some bank erosion. Other Other
on of Discharge is with a layer of Discharge	Conveyance Chef cobbles, and Conduit Meetal: 6 inch	annel Good; the the west side h	e bed and banks are partial has some bank erosion. Other Other
on of Discharge d with a layer of drain/Outlet Two Concrete X rete: 30 inch, Me	Conveyance Ch f cobbles, and Conduit Me etal: 6 inch	tal X Length 254	Other
rain/Outlet Two Concrete X rete: 30 inch, Me	ConduitMe	the west side h	Other
rain/Outlet Two Concrete X rete: 30 inch, Me	ConduitMe	the west side h	Other
Two Concrete X rete: 30 inch, Me	. Conduit_ Me etal: 6 inch	tal X Length 254	Other
Concrete X rete: 30 inch, Me	ConduitMe	Length 254	Other
Concrete X rete: 30 inch, Me	ConduitMe	Length 254	Other
Concrete X rete: 30 inch, Me	ConduitMe	Length 254	Other
Concrete X rete: 30 inch, Me	ConduitMe	Length 254	Other
Concrete X rete: 30 inch, Me	Me etal: 6 inch	Length 254	Other
Concrete X rete: 30 inch, Me	Me etal: 6 inch	Length 254	Other
rete: 30 inch, Me	etal: 6 inch	Length 254	
rations: Entranc			
			Exit 1113.0
	ne):		Unobservable X
1: Prestressed			
Rubber/Steel ar			
ic Canability:	Good	,	
			
of Control: Gat			Uncontrolled
on operatie	X	couneran I 🖨	lincontrolled
Condition (Desc	_		Uncontrolled_
2	lic Capability: of Control: Gas	of Control: Gate Slide Gate	Flat Frame of Control: Gate Slide Gate Valve

a.	Concrete Surfaces Excellent Condition
ъ.	Structural Cracking
c.	Movement - Horizontal & Vertical Alignment (Settlement) None evident
d.	Junctions with Abutments or Embankments Not applicable
e.	Drains - Foundation, Joint, Face Not applicable
f.	Water Passages, Conduits, Sluices Not applicable
g.	Seepage or Leakage None observed

	Joints - Construction, etc. Not applicable
·	
•	Foundation Not applicable
,	
•	
•	Abutments Not applicable
,	Control Gates 6" flat frame slide gate on the reservoir drain at its inlet
	to the reinforced concrete riser
	Approach & Outlet Channels Not applicable
•	
	Energy Dissipators (Plunge Pool, etc.) Plunge pool at the principal spillway
	outlet
	Intake Structures Reinforced concrete riser has a 14" x 12" orifice
	Intake officeures
•	Stability No evidence of structural instability
	
	Miscellaneous No comments

a. Descr	iption and Conditi	on None		
			· ····································	
		۲		
				
	<u> </u>			
				

APPENDIX C HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS HYDROLOGIC AND HYDRAULIC ENGINEERING DATA

AREA-CAPACITY DATA:

		Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1)	Top of Dam	1161.8	17.7	227
2)	Design High Water (Max. Design Pool)	1158.9	15.5	179
3)	Emergency Spillway Crest	1156.9	13.9	150
4)	Pool Level with Flashboards			
5)	Principal Spillway Crest	1131.5	1.2	4

<u>DISCHARGES</u> :	$\frac{\text{Volume}}{(\text{cfs})}$
1) Average Daily	Unknown
2) Emergency Spillway @ Maximum High Water (Top of Dam)	3375
3) Emergency Spillway @ Design High Water	717
4) Principal Spillway @ Emergency Spillway Crest	32
5) Low Level Outlet @ Principal Spillway Crest	2
6) Total (of all facilities) @ Maximum High Water	3410
7) Maximum Known Flood	Unknown
8) At Time of Inspection	1±

~	~~	_

Not applicable

1.0 foot

Vegetated earthen embankment

ELEVATION: 1161.8

320 Feet

Slope = 0.020 on the approach channel

Width 16 Feet		Length _	420 Feet
Spillover Vegetated emergen	cy spillway		
Location Left abutment		· · · · · · · · · · · · · · · · · · ·	
SPILLWAY:			
PRINCIPAL			EMERGENCY
1131.5	Elevation		1156.9
Drop inlet structure	Туре		Earth excavated
14" x 12" vertical orifice	Width		120 Feet
Orifice	Type of Control Uncontrolled		Weir
-	Controlled		-
-	- Туре:		-
	(Flashboards; ga	te)	
One	Number	_	One
30 inch/254 feet	Size/Length		120 Feet/680 Feet
Concrete	Invert Material	7	Vegetated cover on earth

Spillway Crest & Approach Channel Invert (Weir Flow)

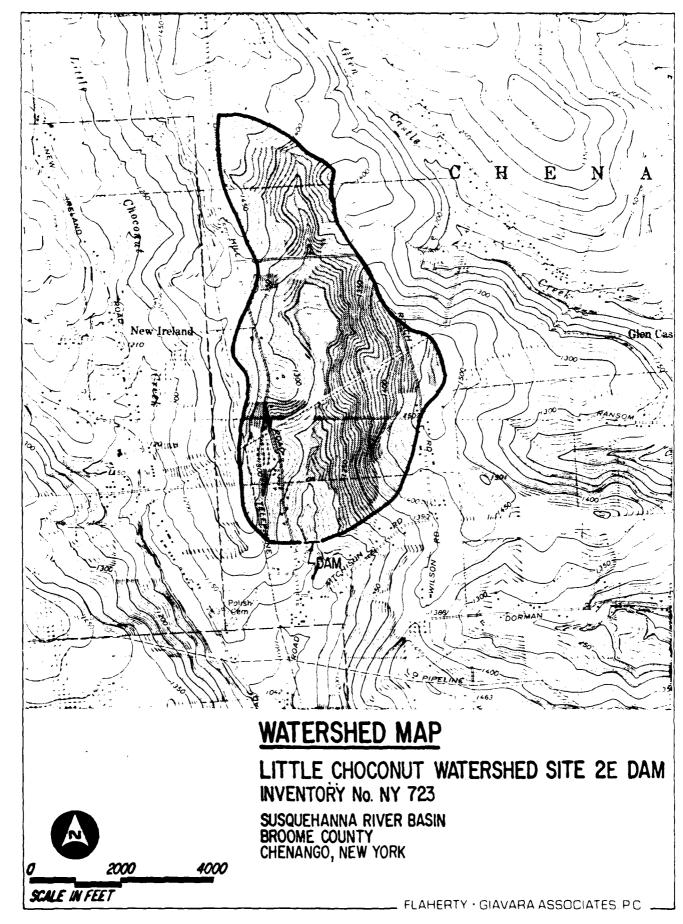
Anticipated Length of Operating Service_

Chute Length

Height Between

Records:	
Date	June 24, 1972
Max. Reading	Elevation 1148.5 (NGVD)
LOOD WATER CONTROL ST	
	VSTEM: Under preparation by the Broome County Soil & Water Conservatio
Warning System District	

INAGE AREA:	653 acres = 1.02 sq. miles	
TNACE BACTY DEDOCTOR	D. CHARLESTON CONT. CO.	
	F CHARACTERISTICS:	
Land Use - Type	Rural, agriculture	
Terrain - Relief	Hilly to steep slopes	
Surface - Soil	Glacial till	
Runoff Potential	(existing or planned extensive alterations to existing (surface or subsurface conditions)	
Moderate	to high runoff due to steep slopes	
D-1		
None	ntation problem areas (natural or man-made; present or future)	
		
Potential Backwai	ter problem areas for levels at maximum storage capacity	
including su	rcharge storage:	
None		
Dikes - Floodwall perimeter:	ls (overflow & non-overflow) - Low reaches along the reservoir	
Location:	Spur dike at the left end of dam embankment	
Elevation:_	1157.3 to 1161.8 (NGVD)	
Reservoir:		
Length @ Max	ximum Pool 2000 feet = 0.4 miles (Mi	1001
_		TES)
Length of St	noreline (@ Spillway Crest) 4500 feet 0.8 miles (Mi	les)



CALCULATIONS



FLAHERTY-GIAVARA ASSOCIATES SHEET NO 1 OF ENVIRONMENTAL DESIGN CONSULTANTS BY 3 CHK'D. BY 1 DATE DATE

WATERCHEL LATA

FOR HECT , SNYLER HYDROGHMAN METHOL

$$S = 370' = 0.0336 FT/FT$$
11,000'

$$T_p = 1.2 \left(\frac{2.09 \times 0.31}{\sqrt{0.0336}} \right)^{0.33} = 2.79 \text{ HOULD}$$

2) SET CP = 0.625 FOR HIGHLAND AREA

H) WARETHERE APENIA GOS AS = 1. 2 STO TO



FLAHERTY-GIAVARA ASSOCIATES SHEET NO. 2 OF 5 DATE 1-13.

ENVIRONMENTAL DESIGN CONSULTANTS BY 51 DATE 1-13.

CHR.D. BY 51 DATE 1-13.

E RAJUTAL DATA FOR PMP EVENT FROM HR # 33 DATA AS REPRINTED IN DESIGN OF SMALL DAMS"

> 6 HOUR DURATION PMP = 23.5 INCHES FOR 10 SQUARE MILES . ADJUSTMENT FACTORS FOR OTHER DURATIONS ARE:

DURATION, HRS	ADJ FACTOR, %
6	100
12	110
24	120
48	127



FLAHERTY-GIAVARA ASSOCIATES SHEET NO. 3 OF ENVIRONMENTAL DESIGN CONSULTANTS BY SOME TOLUMBUS PLAZA NEW HAVEN CUNN 00610/203/789-1280 CHK'D BY

PRINCIPAL SPILLWAY STAGE - DISCHARGE CURVE

PRINCIPAL SPILLWAY ACTS AS AN ORIFICE

\$ ELEVATION IS //3/15 +0.5 = 1/32 FT AREA = 1,33 FT2 C = 0.6

Q = CAJZGH = CAVZG (H) 12 Q=(0.6)(1.33)(\(\sqrt{64.4}\))H'= 6.40H'/2

STAGE (FEET)	HEAD, FT (STAGE - 1132)	DISCHARGE CFS 6.40(H) ^{VZ}
1131.5		0
1135	3	11-1
1140	8	18.1
11 45	13	23.1
11 50	18	27.1
1156.9	24.9	31.9
1158.9	26.9	<i>33.2</i>
1161.3	29.8	34.4

SCS STAGE-DISCHARGE DATA FROM DESIGN REPORT

STAGE	discharge
(FEET)	(TOTAL CFS)
1158.9	750
1161 3	3410



FLAHERTY-GIAVARA ASSOCIATES ENVIRONMENTAL DESIGN CONSULTANTS

SHEET NO OF STATE OF

EMERGENCY SPILLWAY DISCHALT SE CHANNEL

b = 120 FT

(VARICE PLUE & MINUS)

2 = 3:1

5= 3.2 %

N= 0.040

Q = 2482 + CFS (PMF DISCHALLE)

FIND DA,V

Q= K 6 5" (KINGS HANLESS THE E 7-11)

 $K' = \frac{2482(0.04)}{(120)^{1.87}(0.032)^{0.5}} = 0.00156$

INTERFOLATE: 0.00156-,00070 _ 0.562 0.00223 0,00030

D = 0.0156

D= 0.0156 (125) = 1.87 FT

A = 1.87'(120) + 1.87(3)(1/2)(1.87)(2) = 234.9

AVE. UEL. = Q = 2427 = 10.6 FPS ±

This VELOCITY THE LATTE SOME THE A PER OF VEGETATEL STRUCKY

HEC-1 FLOOD HYDROGRAPH COMPUTATIONS

HCAUTO - CYBER 175-1 1005.																											
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NOS 1.3 - L.485.						_	_					_	EEEEEEEEE	EEEEEEEEEE	EE	EE	H	H	EE	EEEEGEEEEE	EEEEEEEE	EE	EE	EE	H	EE	
81/02/05. 10.21.32.																											

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14448111180GRAFH FACNAGE (HEC-1)
IAM SAFEIT VERSION JULY 1978
LAST MOUTFICATION 26 FEB 79
1 AST MOUTFICATION 26 FEB 79
1 AST MOUTFICATION 27 STEED 79
1 AST MOUTFICATION 27 STEED 79
1 AST MOUTFICATION 27 STEED 79
1 AT MAILONAI DAM INSPECTION FROGRAM FHASE 1 REFORT CORPS OF ENGINEERS
2 A 2 DAM I.D. \$NY23 STEED 5 RROOME COUNTY NEW YORK 273/81

C-11

0.01 1161.8 3410.0 C 0:1 0 OF SEQUENCE OF STREAM NETWORK CALCULATIONS 1158.9 750.0 21.5 1164.0 0 1156.9 31.9 17.7 1161.8 0 1 127 0 RESERVOIR ROUTING MODIFIED FULS METHOD 1150.0 27.1 15.5 0.0 120 0 1158.9 INFLOW HYDROGRAPH, SNYDER METHOD 1145.0 23.1 13.9 110 1156.9 415.0 1148.0 1.5 1.02 0. 1140.0 30 18.1 7.5 PREVIEW 23.5 1135.0 11.1 1140.0 \$£1131.5 0.0 Y41131.5 \$D1161.8

RUNOFF HYDROGRAFH AT ROUTE HYDROGRAPH TO ENI: OF NETWORK

KUN DATER 81/02/05.

NATIONAL TAM INSFECTION FROGRAM FHASE I REFURT CORFS OF ENGINEERS TAM I.D. ANY 723 SITE 2-E BROONE COUNTY NEW YORK 2/3/81 FREFAKED BY FLAMERTY GIAVARA ASSOC., NEW HAVEN CONNECTICUT JOB SPECIFICATION

NHK NHIN IDAY IHR ININ METRC IPLT IFRT NSTAN

O 30 0 0 0 2 0 0

S JOFER NWT LROFT TRACE

5 0 0 0

MULTI-FLAN ANALYSES TO BE FERFORMED NFLAN= 1 NRTIO= 9 LRTIO= 1

NFLAN= 1 NKTIO= 9 LRTIO= 1 RTIOS= .10 .20 .30 .40 .50 .60 .70 .80 1.00

SUB-AREA RUNOFF COMFUTATION

INFLOW HYDROGRAFH, SNYJER METHOD

ISTAR ICOMF IECON ITAFE JFLT JFRT INAME ISTAGE IAUTO
1 0 0 0 1 0 0

C-12

						COMF Q	36.	20.	64.	80. 88.	115.	129.	150.	158.	164.	220.	297.	571.	757.	1206.	1528.	2195.	2424.	2518.	2443	1990.	1721.	1457.	1020.	856.	721.	60%	442.
					80. 11. 2.	5507	50.		.05	.05	.05	.05	.05	.05		.03	٠ د د	.05		0.00	20.	0.00	.05	50.	0 0	.03	.05		. 05	.05	.05	5	0.00
LOCAL		RTIMP.01			VOL= 1.00 97. 14. 2.	EXCS	.15	.15	. 15	.15	.15			.15	51.	1.13	1.36	1.71	1.71	6.74	1.60	1.00	1.24	.07	ò 6	.0	.07	.00	.07	.07	.0.	,0.	00.0
I SAME I	R96 0.00	ALSHX 0.00		INTERVALS	.63 VI 117. 17. 2.	RAIN	.20	. 20	.20	20	. 20	.50	50	.20	1.20	1.18	 	1.76	1.76	6.79	1.65	1.29	1.29	.12	7 5	. 12	.12	12	. 12	.12	.12	N 5	00.0
ONS	.00	CNSTL.		1.00	- A	PERIOD	61	63 63	49	6 5	67	99	20	71	72 11	7.4	75	77	78	8	81	83	8	92	9 6) 8 8	89	90	9.2	6	9. C	C &	97
RATIO 1	.00 o	STRTL 1.00	0 #	RTIOR=	2.81 HOURS 139. 20. 3.	HR. MN	40 F		& (8.30 9.00	. 0			11		13.00			-, ,									21.00					
	0 127	RTIOK 1.00	H DATA	DATA 2.00 : TC= 6.45		FLOW MO.EA	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	20.1	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.03
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******** ******* HYDROGRAFH ROUTING **** ******* *******

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STATION 1, FLAN 1, RATIO 7
END-OF-FERIOD HYDROGRAPH ORDINATES

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STATION 1, FLAN 1, RATIO B
END-OF-FERIOD HYDROGRAFH ORDINATES

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	4 ∨	2.	12.	13.	14.	20.	31.	1469.	305.	44.	31.			-	1.	, 9	٥.	10.	27.	131.	197.	166.	156.	146.		1132.6	1132.3	1132.1	1135.3	1136.4	1136.9	1147.2
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STATION 1, FLAN 1, RATIO 9

END-OF-FERIOD HYDROGRAPH ORDINATES

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FEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE FLAN-RATIO ECONOMIC COMPUTATIONS FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS FER SECOND) AREA IN SQUARE NILES (SQUARE KILOMETERS)

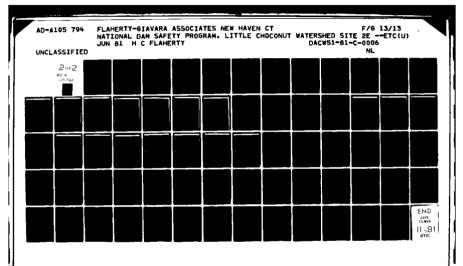
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1					SUMMARY 0	SUMMARY OF DAM SAFETY ANALYSIS	TY ANALYSI	r o				

FLAN		ELEVATION Storage Outflow	INITIAL VALUE 1133.36 3. 6.	VALUE .36 3. 6.	SFILLWAY CREST 1156.90 155. 32.		1161.80 1161.80 233. 3410.	
	RATIO OF FMF	MAXINUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	HAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	EURATION OVER TOF HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FALLURE HOURS
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	30	1158.68	00.0	181.	669.	80.0	44.00	00.0
	04.	1159.17	0.00	189.	966	0.00	43.00	0.00
		1159.71	00.0	197.	1490.	800	42.50	00.0
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APPENDIX D

PREVIOUS INSPECTION REPORTS/AVAILABLE DOCUMENTS



DESIGN REPORT

LITTLE CHOCONUT, FINCH HOLLOW,
AND
TROUT PROOK WATERSHED PROTECTION PROJECT

DESIGN REPORT

SITE FLE

BROOME COUNTY, NEW YORK

U S. DEPARTMENT OF ACTIOUSTURE SOIL CONSERVATION SERVICE

n_1

S DEFIRITION OF ALLOWINGE ---- SOL CONTINUED OF ALLOW

This floodwater retarding structure is located on Little 0 account Creek approximately 1.5 miles north of Choconst Center, New Yorn. Seet 4 of this report, together with the Castle Creek, N.Y. 7.5% quality the published by the U.S. Geological Survey, may be used to less to this structure.

As many of pertinent desire infinition is given as Silver and Colors appear.

C. Iteria and procedures used in this design and thought by $k = 1004 \pm 100$. Sharice publications.

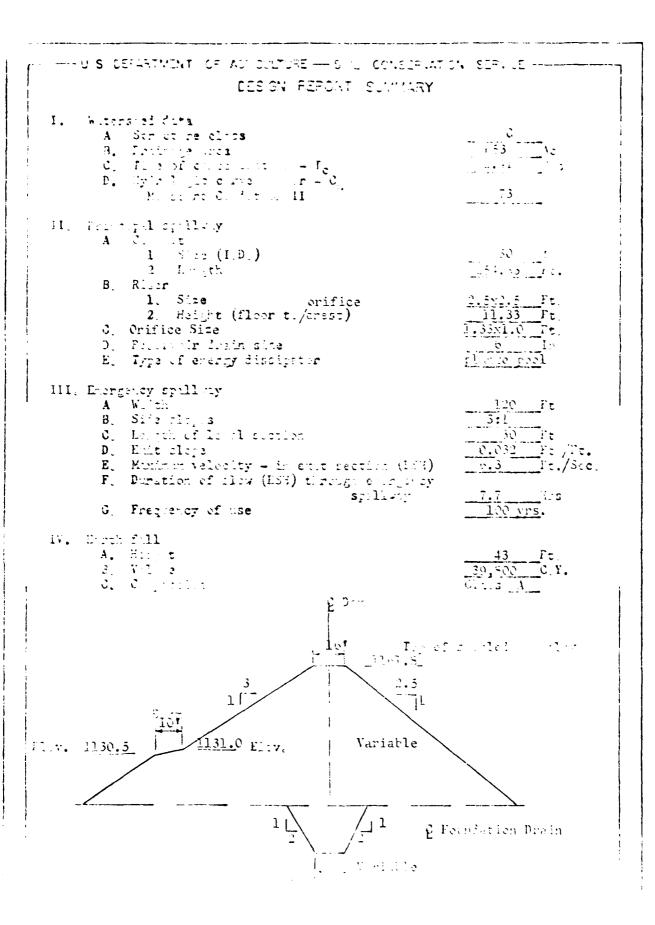
T is is one of eight proposed floodwater returned is a line of L1 tree Checonut, Finch Hollow, and Trout Brook Watershed deslened to reduce floodwater damages. It will retard a 100-year frequency storm without discharge occurring in the emergency spillway.

The results of hydrologic and hydroulic computations are given on Sight 3 of this report.

The structure consists of a homogeneous compacted earth fill on a foundation of 4 ft. to 5 ft. of clean gravels, underlain by a sequence of gruy and brown dense tills. Both abatments are a dense clacial till. A drainege system is located under the downstream portion of the earth fill to control the phreatic surface and provide safe outlet for foundation seepage. A cutoff trench is located along the dam to reduce seepage.

The principal spillway is a drop inhet struct re-consisting of a reinflored concrete risor, 30 inch di meter concrete was in pige, and a circular plunge pool to dissipate energy at the outlet end of the conduit.

The emergency spillway is designed as an earth out in the cost adoptment.



----U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSENTATION SERVICE --

- 	-				
Peak Put Class	Inches # (c.f.s.) (c.f.s.)		31.9	057	STE
wor	Kate (c.f.s.)			1,089	30
Jullow	Volume Rate Inches # (c.f.s.			5.98	£6.97
,	Inches	e.0	2.76	3.29	4.17
Storage	Acre-Feet Inches	كا.:	15021	£621	£155
Surface	Acres	1.2	13.9	15.5	17.7
	Elevation	1131.5	1156.9	1158.9	1161.8
	Percenting Factor	50 yr. submerged sed- iment accumidation	100 yr. frequency storm Meisture Condition 11	1.00 x value from ** ES 1020 Sheet 4 of 5, Moisture Condition 11	L.00 x value from ** ES 1020 Sacet 5 of 5, Moisture Condition if
Element	of ouracture	Crest, of original	Crest of cacegory spil tway	Design high water	Top to doll

Wolume expressed in mones of runoff from controlled area of 653 acres. * Hydrologic criteria in National Engineering Nemerandum 205-27 (Nev.).

Time required to empty temporary storage = 8.0 days. / Storage althorated to bediment pool.

-- UESIGN SECTION, SYRACUSE, NY --

$+\cdot+\cdot$ U S DEPARTMENT OF ACHIBULTURE $\cdot\cdot-\cdot$ Cold conclusion of \cdot

42/20100# Site 2E 75"55"00" 75.5713011 42*07130"

> Ref rende: USOS 7.5% O. 3. 1:24,000 CASTLE CHARK, 1000 N. N.

DISCORNING DATE OF ANY OUTURE -- SOLL CONNERNATION SERVICE

I contation pertaining to the criteria and procedures referred to in this report may be obtained from Mr. Wallace L. Anderson, State Conservation Service, Sprache, New York.

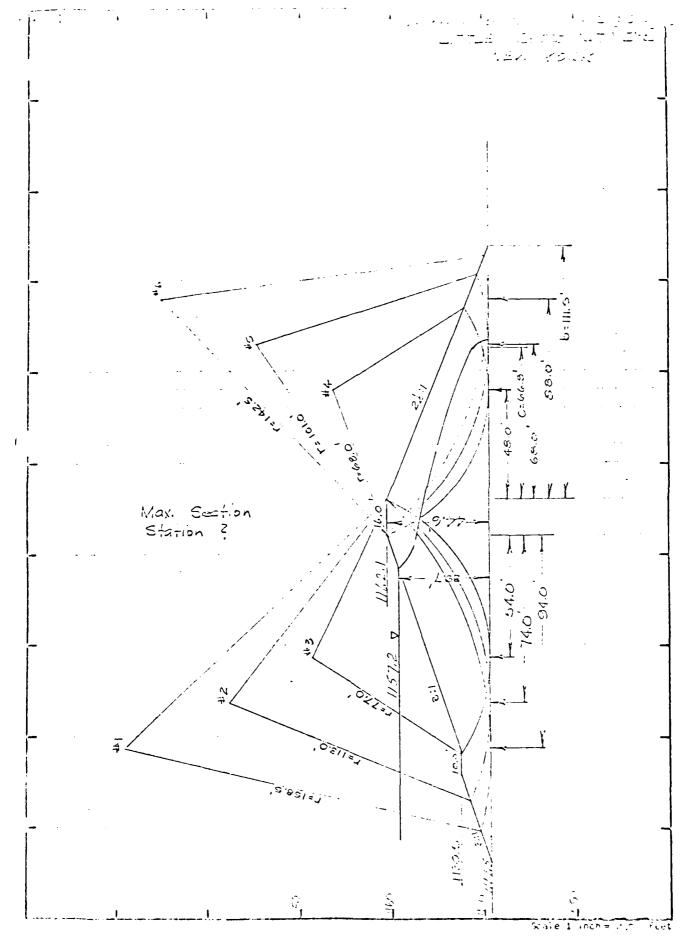
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SLOPE STABILITY ANALYSIS

MATERIALS U.S. DEPARTMENT OF AGRICULTURE SUMMARY - SLOPE TESTING REPORT SOIL CONSERVATION SERVICE STABILITY ANALYSIS

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GEOLOGY REPORT

GEOLOGY REPORT

SITE 2-B

LITTLE CHOCONUT WATERSHED

MAINE TOWNSHIP

NEW YORK

APPROVAL:

W. S. Atkinson

State Conservation Engineer

PREPARED BY:

Bernard S. Ellis Geologist

REFERENCE:

U.S.DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NY-2019-G
SHEET OF DATE 2/66

USDA-SCS

10-59

DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

State	New York County	Broome	. Watershed .	L.	Choconut	Subwatershed		
Site numbe	r <u>2E</u> Site group	, Structure class _	С	investig		Ellis, Geologist	. Date _	11/65

INTERPRETATIONS AND CONCLUSIONS

CENTERLINE OF DAM

Both abutments of this site are a dense glacial till. While no deep holes were drilled in these abutments, I feel that blow count in this material would be very comparable to the count logged in the flood plain tills.

The foundation tills in the flood plain are mantled with a reworked till and one zone of bouldery material that apparently is a pocket.

Differential settlement, then, will not be a problem on this site. Uniform high bearing strength is available along the entire extent of the dam.

The reworked till in the flood plain is permeable. I suggest then a root zone cutoff in the abutments and through this permeable till in the flood plain. As shown on the C/L of the dam profile, there are also two zones of permeable till (or possibly gravel) at moderate depth (231) under the flood plain. Artesian pressures exist in these aquifers. As indicated in the logs, we had a maximum static head of about 61 Λ .G.L. in the flood plain and a flow equivalent to a $\frac{1}{4}$ " stream.

In my opinion, the depth and density of the till overlying these aquifers is such that the condition does not constitute a hazard to this dam. It is quite doubtful that there is any open connection between these gravels and the proposed flooded area upstream from the C/L. With regard to these aquifers and the drill holes into them - I visited the site a week or so after drilling was finished. Water was seeping out of the drill holes. D.H. 351 won't be a problem because of its location upstream from the cutoff and in an assumed saturated zone anyway. However, D.H. 51 could conceivably seep enough water to keep that section of the cutoff saturated. Proper adjustment of the cutoff and installation of a drainage system in the final design should take care of this situation.

The CWT is probably quite variable in the flood plain section of this dam. I would imagine that we at least have a perched water table condition in the cleaner gravels most of the year, the elevation of which would depend on the amount of flow in the stream. The main body, or ground water table, is probably close to the top of the gray till in the flood plain. In the abutment, I would estimate it at a depth of 15° or more. The seepage indicated at the bottom of some of the emergency spillway and borrow area pits is probably localized concentrations of water in sandier streaks.

10_50

DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

:e _	New York	County	Broome	Watershed	Choconut	Subwatershed	· 	
Site nui	mber <u>2E</u> S	ite group	Structure o	lass (nv	estigated by	.Geologist	_ Date _	11/65

INTERPRETATIONS AND CONCLUSIONS (Continued)

I was unable to obtain a sample of the overlying reworked till logged as symbol "B". Till samples from the spillway and borrow were taken at the time of the backhoe investigation. Floodplain samples were left to correlate with the D.H. samples. At the completion of drilling, the backhoe piles were frozen solid. If necessary, I can obtain a sample of this material this spring.

PRINCIPAL SPILLWAY

Foundation conditions for the principal spillway appear to be satisfactory. The blow count shown in D.H. 351 should be representative of foundation conditions along the extent of the pipe. I would recommend that the spillway trench be excavated down to the top of the gray till in order to negate the effects of any variations that might exist in the reworked till logged in the first 4' or 5' of the section.

EMERGENCY SPILLWAY

As indicated in the front of this report, the emergency spillway excavation will be a fairly uniform glacial till.

I do not believe that the water in the sandy zones will be a permanent problem, or at least enough of a problem to design drainage into the outer face of the spilluay cut. In my opinion, these zones will drain out fairly well after construction and remain moderately dry. Normal evaporation from the sloped face of these zones should pretty well take care of any permanent seepage that might occur.

The lack of information down to design grade was mentioned in the front of this report, along with the opinion that bedrock would be absent in the emergency spill-way excavation.

BORROW AREA

A supplemental borrow investigation was made for this structure. However, the intermediate stage design indicates an emergency spillway excavation of approximately 44,000 cu. yds. against a compacted fill requirement of 37,000 cu. yds.

In any event, the borrow area consists of the same till encountered in the emergency spillway area and, if used, should pose no construction problems other than minor seepage below a depth of 6!-7! in some areas.

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

GENERAL

<u>B</u>				
State lieu York	County Broome	; ¼, ¼, Sec, T	R ; Watershed Littl	e Choconut Crk
Subwatershed	Fund classF03	Site number 2-E Site gro	up Structure class	C
Investigated by 3.5	///s ,Geolo Tist	Site number 2-E Site gro 1, etc.) pment used Backhoe, Dri1 (Type, size, make, r	1 Rig Date	11/65
(21)	gnature and title)		nodel, etc.)	
	,	SITE DATA		
Trainage area size 1.02	sq mi., 653 acres. Tyj	pe of structure Earth Fill	Purpose Floodwate	r Retarding
rection of valley frend (down	stream) South	Maximum height of fill44.6	feet . Length of fill	410 feet.
		O yards	-	
		STORAGE ALLOCATION		
	Volume (ac. ft.)	Surface Area (acres)	Depth at Dam	·
Sediment	4.1	1.2	9.5	
Floodwater	185	15.6	37.2	
4				
•	SURFAC	E GEOLOGY AND PHYSIOGRA	APHY	
				0
Physicgraphic description A	ppalachian Plateau	TopographyMod-SteepAttitu	ide of beds: Dip	Strike SSO W
sepness of abutments: Left	15 percent; Right 2	percent. Width of floodplain at ce	nterline of dam	
General geology of site: Ti	nis site is located	in the south central se	ection of New York	State,
approximately	12 miles north of t	the Pennsylvania state 1	ine. Specifically	, it is 5
miles due nort	h of Johnson City,	New York and 3 miles SW	of the Broome Cou	nty airport.
The glaci.	al ice that modific	ed the topography drastic	cally in some area	s of this
state had litt	le effect on this s	section. The ice sheet (<u>terminated_approxi</u>	mately
40 miles south	of Binghamton, so	therefore it was relativ	vely thin in this	area.
Relief_ran	nges from an elevat	ion of 800' in the Susqu	iehanna valley to	1500
plus in the vic	cinity of this site	. In many localized are	eas, the creation	of late-
stage glacial	lakes resulted in s	substantial filling of va	illeys with lacust	rine
deposits and a	decrease in relief			
The geolog	ric history of this	site appears to be one	of glacial scour	of the
north-south or	lented valley, with	subsequent deposition of	of till uniformly	over the
entire_site_are	a. Two distinct t	ills are logged in the c	rill holes, on a	color
basisThis_ma	ny_represent_eviden	ice of multiple glaciation	on of this site.	Post-
_		her steep gradient, V-sl		
				····(3)

503 3768						USDA-BCS
13-57	DET	AILED GEOL	OGIC INVESTIG	ATION OF DAM SITES		
Contorl	ine of Dam					
שוניות		mergency Spillway	, the Stream Channel,	Investigations for Drainage of Sti	ructure, Borrow Area,	Reservoir Besia, etc.
			DRILLING PRO	GRAM		
			DAILEING THO		of Samples Taken	
Equipment	Used	Number o	f Holes	Undisturbed	Distu	rbed
		Exploration	Sampling	(state type)	Large	Small
Backhoe		5		••		
Drill Rig		<u> </u>	1			6 (Jar)
						6 (1)
	Total _	 6				6 (Jar)
The flunderlain b of 10', rang A pock D. H. 51. T Permed 4' or so an in the surf Slight depth and a	oodplain of y a sequence es approxima et of heavy, his material ble material dalso below ace crayels artesian profiso at 28.	this site of gray a tely from bouldery extends of s exist or a depth of at the time essure was Water ros	generally cound brown den 70 to 120 bl gravel exist down to a dep in the surface of 23'. Only ne of the inverse encountered se in the case	s in the vicinity th of 9' and is un of this floodplai moderate seepage	of T.F. 4 anderlain by in to a deptimas encounter avel at the approximate	a depth a depth a depth a depth a of a of a cred
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weeks .

			DRILLING PROC	SRAM		
				Number o	of Samples Taken	
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Back	hoe	3				
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57 D	ETAILED GEOL	OGIC INVESTIG	ATION OF DAM SITES	•	
Emergency Spilly	vay				
(Centerline of Dam, Principal Spiflwa	y, Emergency Spillwa	y, the Stream Channel,	Investigations for Drainage of Str	ucture, Borrow Area, I	Reservoir Basi
		DRILLING PRO	CRAM		
		DRILLING FILO		of Samples Taken	
Equipment Used	Number o	of Holes	Undisturbed		.h.d
	Exploration	Sampling	(state type)	<u>Distu</u> Large	Small
Paglibag	3	1		1	
Backhoe					
<u> </u>					
					
					
Total	3	1		1	
÷6" material was enc	that occur in ountered, or recepage was the spillwater pit inform	in this till where sandy as noted in s ay will proba	ome of these sandy oly all be in glaci ot reach grade, all	zones. al till. In the information	om of
spillway.					
•					

D-16

SOILS CORRELATION TABLE AND ESTIMATED AVAILABLE BORROW QUANTITIES

Watershed: L. Choconut Creek Site No. 2-8 State: N.Y. Prepared by: B.S. Ellis Date: 2/66

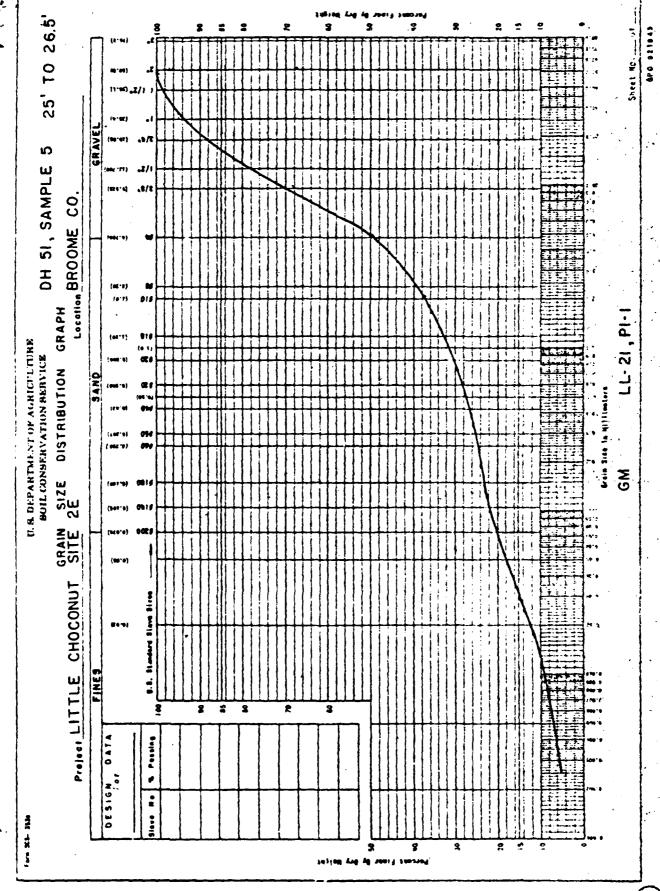
Sample

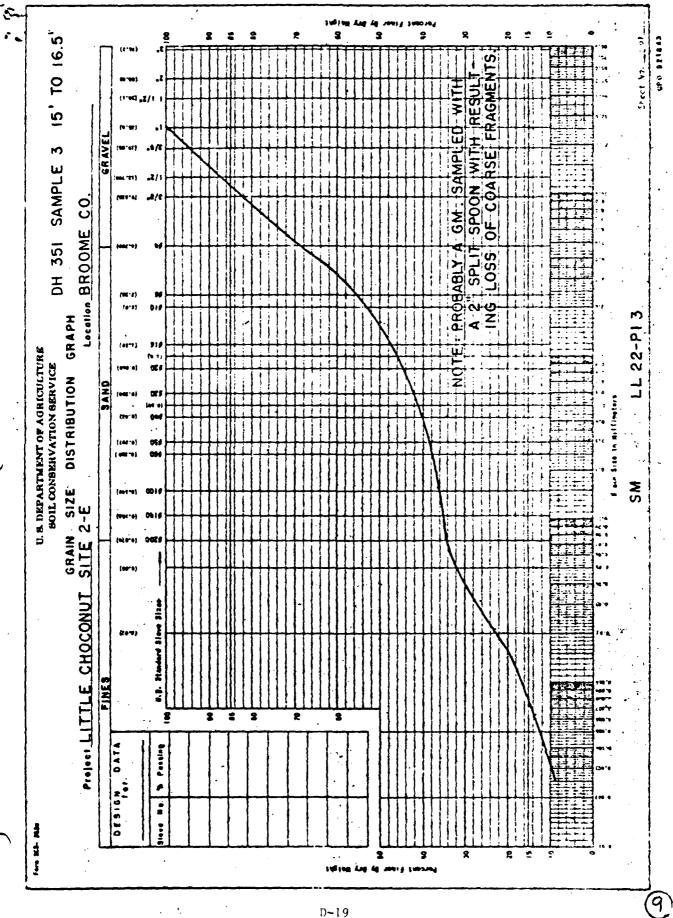
51.5*

- 351.3* These samples were taken to provide correlation data on the underlying gray till in the floodplain. Symbol C.
- 202.1 This sample is representative of the material logged in the emergency spillway excavation. Symbol A.

101.1

- 105.1 These samples were taken to provide lateral correlation of the till on this abutment. Sample 105.1 not submitted to lab due to the fact that all material will come from the emergency spillway excavation. Symbol A.
- Not2: Symbol D was not sampled as it was too bouldery and is actually easily described.
 - * Processed in SCS State lab, Syracuse, New York.





SOILS ANALYSES

Memorandum

TO : W. S. Atkinson, State Conservation

DATE: May 6, 1966

Engineer, SCS, Syracuse, New York 13210

FROM : Rey S. Decker, Head, Soil Mechanics Laboratory.

SCS, Lincoln, Nebraska 68508

SUBJECT: ENG 22-5, New York WP-08, Little Choconut Creek, Site No. 2-E

(Broome County)

ATTACHMENTS

1. Form SCS-354, Soil Mechanics Laboratory Data, 1 sheet.

2. Form SCS-355, Triaxial Shear Test Data, 1 sheet.

3. Form SCS-352, Compaction and Penetration Resistance, 2 sheets.

4. Form SCS-372, Summary - Slope Stability Analysis, 2 sheets.

5. Investigational Plans and Profiles

DISCUSSION

FOUNDATION

- A. Classification: Abutment material is glacial till classified GC with 35% to 40% fines. The narrow floodplain is blanketed to depths of 4' to 5' with clean gravels, classified GP. An 8' deep pocket of boulders with sand and gravel lies next to the right abutment. The underlying GM till is about 14' thick. Deeper layers include 3' of GP, 2.5' of GM, and the boring (DH 51) continued 2 more feet into GP.
- B. Blow Count: Tests taken in DH 51 indicate that foundation strength is high, and that consolidation potential is low.
- C. Permeability: The abutment till, GC, and the deeper till, GM, are described as slowly permeable. Field Sample No.s 3 from DH 351 and 5 from DH 51, both GM, contain 20% or more fines. Hydraulic pressure in the deeper GP layers also indicates that permeability of overlying GM is relatively low. The surface GP and bouldery material and the deeper GP layers are permeable.

Assuming that the effective weight of the CM till and floodplain gravels is 70 pcf, pressure of a 21' column is 1470 psf. It is doubtful that uplift pressure at the base of the GM will exceed 50% of the net head of 40' or 1250 psf. This would indicate that relief of the deep GP layers is not needed. In addition, surface gravels downstream from the cutoff will function as a blanket drain.

2 -- W. S. Atkinson -- 5/6/66

Rey S. Decker

Subj: ENG 22-5, New York WP-08, Little Choconut Creek, Site No. 2-E

EMBANKMENT

- A. Classification: Both samples, 66W2531 (202.1) and 66W2532 (101.1), are classified CL and contain 45% sand and gravel. Plus 3" material in the amounts of 10% and 5% is excluded from the gradations shown on Form SCS-354. These samples are from the GC till. Rock in this material has a unit surface dry weight of 162 pcf.
- B. Density: Maximum density, based on standard tests for minus #4 material, is 118.0 pcf for Sample 66W2531 and 117.5 pcf for Sample 66W2532.
- C. Shear Strength: Minus #4 material was compacted to 95% of standard density and saturated. Consolidated, undrained values are $\emptyset = 20.5^{\circ}$, c = 450 psf. Based on tests on similar material from other sites, it is concluded that the interpretation is somewhat conservative.
- D. <u>Permeability</u>: Permeability of compacted embankment soil will be low, based on gradation.

SLOPE STABILITY ANALYSIS

The embankment analysis, summarized on Form SCS-357, shows that 3:1 upstream and $2 \frac{1}{2:1}$ downstream slopes are satisfactory. The foundation is considered to be non-yielding for slope stability.

RECOMMENDATIONS

A. <u>Cutoff and Drainage</u>: Cutoff of disturbed surface soil is recommended for both abutments. Cutoff of permeable gravels and the boulder zone is recommended for the valley section.

Bottom width should be greater than normal to maintain a relatively low hydraulic gradient across the cutoff. It is suggested that the cutoff be located at the midpoint of the upstream slope, and that all permeable material be excavated from the floodplain upstream to the toe. Excavated material can be placed over the gravels downstream from the cutoff, enlarging the natural blanket drain. The outlet for this drain can be a rock toe and trench or a trench and perforated pipe, depending on availability of materials.

Drain filter materials for transitions can be determined in the field, when gradation of the gravels can be obtained.

- B. Principal Spillway: No problems are anticipated, regarding settlement and elongation.
- C. Embankment: The following are recommended:

3 -- W. S. Atkinson -- 5/6/66

Rey S. Decker

Subj: ENG 22-5, New York WP-08, Little Choconut Creek, Site No. 2-E

1. Selection of Material: Material represented by samples tested can be used anywhere in the embankment and for backfill of excavations.

Density control, based on 95% of standard, using either minus #4 or minus 3/4" material, is acceptable.

- 2. Slopes: Three to one upstream and 2 1/2:1 downstream slopes are recommended.
- 3. Settlement Allowance: An allowance of 1.5' is suggested for residual settlement in the fill and foundation. This is based on an average of 3% for the fill and 0.2' for the foundation.

Prepared by:

Robert E. Nelson

Reviewed and Approved by:

Roland B. Phillips

Attachments

cc: W. S. Atkinson

B. S. Ellis, Syracuse, New York

D. W. Shanklin, Binghamton, New York

H. M. Kautz, Upper Darby, Pennsylvania

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MATERIALS U. S. DEPARTMENT of AGRICULTURE TESTING REPORT SOIL CONSERVATION SERVICE	
Little Chacomet Creek # 2-E	New York
FOR SAMPLE NO COCATION SPENY.	21-12'
SML-LINCOLN	APPROVED BY DATE
CLASSIFICATION	CURVE NO OF
MAX. PARTICLE SIZE INCLUDED IN TEST < #4 "	STD (ASTM D-698) Z; METHOD _A
SPECIFIC GRAVITY (G_s) $\begin{cases} MINUS NO. 4 & 2.73 \\ PLUS NO. 4 & \end{cases}$	MOD (ASTM D-1557) T; METHOD OTHER TEST T (SEE REMARKS)
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LABORATORY NO 66 112532 Form 505 352 Rev. 5-65 COMPACTION AND U. S. DEPARTMENT of AGRICULTURE MATERIALS TESTING REPORT SOIL CONSERVATION SERVICE PENETRATION RESISTANCE Choconut Creek # 2-F Borrow TESTED AT APPHOVED BY SIML-LINCOL CLASSIFICATION ___ LL 32 PI 12 CURVE NO. MAX. PARTICLE SIZE INCLUDED IN TEST < # 4 STD.(ASTM D-698) S. METHOD MINUS NO. 4 MOD (ASTM D-1557) □; METHOD SPECIFIC GRAVITY (Gs) PLUS NO. 4 OTHER TEST [(SEE REMARKS) 2500 2000 PENETRATION RESISTANCE ON 1500 500 140 117.5 pct OPT MOIST 135 SOIL, COMPACTED 125 DRY DENSITY Z #4 MATERIAL 120 9 115 DENSITY 040% 105

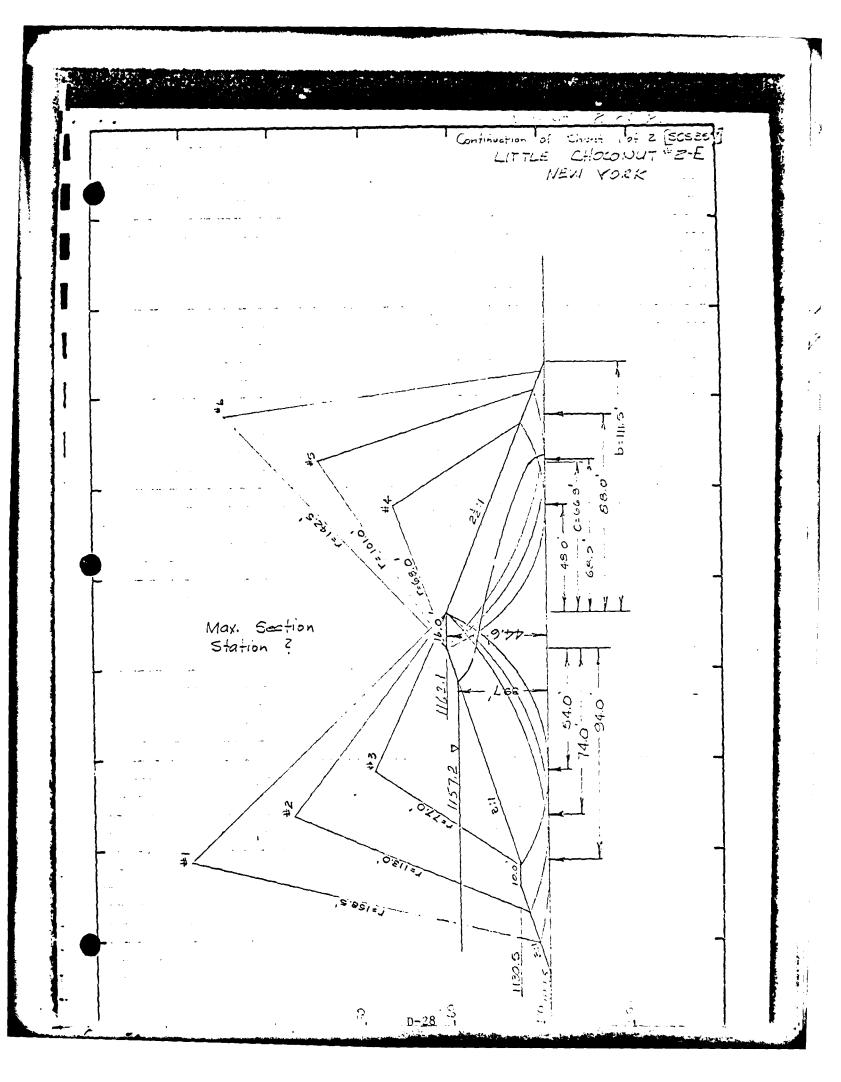
REMARKS

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MATERIALS U.S. DEPARTMENT OF AGRICULTURE SUMMARY - SLOPE TESTING REPORT SOIL CONSERVATION SERVICE STABILITY ANALYSIS

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UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

	SOIL COMSERVATION SERVICE		
TO	: James W. Bickle, Administrative Officer, Nebraska State Office 68508	INVOICE NO. 31	3-66
		WORK ORDER NO.	66-337-W
FRCM	: Rey S. Decker, Head, Soil Mechanics Iaboratory, SCS, Lincoln, Nebraska 68508	Date O-600. May 9.	1966
SUBJEC	T: Reimbursement - Soil Analysis - FY 1966	0.5.0. NY-14-0	c/o
The fo	llowing reimbursements are for collection from th	e SCS State Of	fice at:
Syr	acuse, New York for (WP-08) Little Choconu	it Creek, Site	2-E
Report	Distribution: W. S. Atkinson, H. M. Kautz, B. S	. Ellis, D. W.	Shenklin
1	each Mechanical Analysis (Hydrometer)	\$ 4.50	4.50
	each Mechanical Analysis, Total Salt	7.50 _	
1_	each Mechanical Analysis, Dispersion	7.10 _	7.10
	each Mechanical Analysis, Total Salt, Dispersion	10.10	
2	each Sieve Analysis - Gravel	5.30 _	10.60
2	each Sieve Analysis - Sand	3.20 _	6.40
	each Core Opening and Description	7.05 _	
	each Dry Unit Weight - Undisturbed Samples	7.60 _	
2	each Atterberg Limits	7.50 _	15.00
2	each Specific Gravity - Coarse Fraction	5.05 _	10.10
2	each Specific Gravity - Fine Fraction	6.40 _	12.80
2	each Moisture-Density (Compaction)	20.00	-0.00
1	each Triaxial Shear - 1.4" and 2.8" Diameter CU	101.80 _	101.80
	each Triaxial Shear - \geq 4.0" and 6.0" Diameter C	u 210.25 _	
	each Consolidation	82.50 _	
	each	-	
,	each	-	

TOTAL \$_ 208.30

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UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

	SOIL CONSERVATION SERVICE		
TO	: James W. Bickle, Administrative Officer, Nebraska State Office 68508	INVOICE NO. 3	43-66
		WORK ORDER NO.	66-337-W
FRCM	: Rey S. Docker, Head, Soil Mechanics Laboratory, SCS, Lincoln, Nebraska 68508	Date O. THO. May 9	, 1966
SUBJEC'	T: Reimbursement - Soil Analysis - FY 1966	0.5.0. NV-14	-66
The fo	llowing reimbursements are for collection from th		
Syr	acuse, New York for (WP-08) Little Choconu	it Creek, Site	2-E
Report	Distribution: W. S. Atkinson, H. M. Kautz, B. S.	. Ellis, D. W	. Shanklin
1_	each Mechanical Analysis (Hydrometer)	\$ 4.50	4.50
—·————	each Mechanical Analysis, Total Salt	7.50	
1_	each Mechanical Analysis, Dispersion	7.10	7.10
	each Mechanical Analysis, Total Salt, Dispersion	10.10	
2	each Sieve Analysis - Gravel	5.30	10.60
2	each Sieve Analysis - Sand	3.20	6.40
	each Core Opening and Description	7.05	
	each Dry Unit Weight - Undisturbed Samples	7.60	
2	each Atterberg Limits	7.50	15.00
2	each Specific Gravity - Coarse Fraction	5.05	10.10
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2	each Moisture-Density (Compaction)	20.00	40.00
1	each Triaxial Shear - 1.4" and 2.8" Diameter CU	101.80	101.80
	each Triaxial Shear - \geq 4.0" and 6.0" Diameter 0	210.25	
	each Consolidation	. 82.50	
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TOTAL \$ 208.30

<u>MEMORANDUM</u>

Hovember 22, 1966

TO:

Pr. J. R. Stellato

Acting Asst. Supt. of Oper. & Maint.

Attention: Ur. A. D. Dickinson

Director of Engineering

FD CH:

Lr. Mm. P. Mofmann, Director Eureau of Soil Mechanics

PROJECT:

Finch Hollow, Little Choconut & Trout Brook

Water Shed Project

Floodwater Retarding Dam No. 2E

Froome County

SUDJECT: Review of Plans

In accordance with your request, we have reviewed the scils and foundations design aspects of the above dam. Cur analysis was based on soil mechanics, geology and design reports plus the plans and specifications which were all transmitted directly to us by the Scil Conservation Service.

Cur review of the subsurface data and the plans and specifications indicates that, in general, the design of this Floodwaver refarding dam is satisfactory and properly accounts for the anticipated soil and foundation conditions. We would suggest that a note be included on Sheet 5 of the plans specifying that the Grain fill which is used as bedding for the rip-rap in the plunge pool be compacted.

We are enclosing the material transmitted to us by the U.S.D.A. Soil Conservation Service.

Eli/mfk

Encl:

cc: Ir. C. W. IcAlpin

ofmann, Diroctor Eureau of Soil Heckanics PREVIOUS INSPECTION REPORTS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DAM INSTECTION REPORT (By Visual Inspection)

Dam Number	River Basin	Town	County	Hazard Class*	Date & Inspector
6A-3623	Susia.	denousa		3	5-20-76 KD
Type of (Construction			Use	
_	concrete spillw	ay		Water Sup	ply
	drop inlet pipe	·		Parent /	Flood Contra
Earth w	stone or riprap	spillway		Recreatio	
Concrete	e			Fish and	Wildlife
Stone				Farm Pond	
Timber				☐ No Appare	nt Use-Abendoned
Estimated	Impoundment Siz	<u>e</u>	Estimat	ed Height of Dam	above Streambed
1-	-5 acres			Under	10 feet
	-10 acres			10-25	<i>^</i>
0,	ver 10 acres			Over 2	5 feet 43
		Condition	of Spillway		
Service	satisfactory		P	Auxiliary satisf	actory
☐ In need	of repair or ma	intenance	$\overline{\Box}$	In need of repai	r or maintenance
Explain	•	-			
Satisfac			n-Overflow So	ection_	
		ition of Med	chanical Equ	ipment	
Satisfac	•				
In need	of repair or ma	intenance	Explain:		
	Evalu	ation (From	Visual Inspe	ection)	
		No de	fects observe	ed beyond normal :	maintenance
		_		peyond normal main	
*Explain Haza	ard Class, if Ne	· ·	-		
)/74)		·· ·			
•			D-32		

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Chemma County Rural Urban Center, P.O. Box 353, Breesport, W.Y. 14816

SUBJECT: ENG - 40 Inspection of Dam Sites; Manticoke 9A, DATE: September 19, 1979
Little Chocomst 2C, CB, ZE

Herbert J. Lyford, Area Conservationist

On September 11, 1979 and September 12, 1979, I inspected the above structures to conform to Administrator's General Eurorandum-16. Dick Crowe and Dan Valker accompanied me on the 11th and only Dan Walker on the 12th.

Hazard classification was not reviewed since all the structures were already hazard class C.

Overall the operation and maintence was good. The only item I question is whether the moving of the dan slopes will eventually kill the crown vetch. I understand that crown vetch should not be moved annually.

On all structures the condition of the principal spilling system was the major item inspected. The slopes of the dam and the energency a spilling were looked at for any seeps of slips.

I did not have copies of the construction as-builts or of previous inspection reports available when the inspections were made. I recommend that these be on site during future inspections.

All the sites inspected with impact basins had evidence of deterioration of the joint filler around the outlet of the conduit. This should be checked annually for loss of soil from behind the back wall of the impact basin.

Attached are the individual reports for the above structures.

Dana C. Chapman, P.E. Project Engineer

cc L. Thomas, R. Crowe, C. Page, R. Perritt

esc.



LITTLE CHOCONUT WATERSHED SITE 2E Inspection Report September 12, 1979

Principal Spillway Pipe

Only joint gaps greater	then 4" are listed	below		
Joint Number From	Location of	Measurement	(looking	downstream)
Construction drawings			o'clock	9 o'clock
1	3/8"	1 n	1 11	$\frac{1}{2}\pi$
2	3/4"	3/4"		
4	3/8"	1 11	$\frac{1}{2}$ II	3/4"
5	<u>1</u> n	-	-	3/8"
6	-	-	-	$\frac{1}{2}$ tt
7	-	3/8"	_	-
8	3/8"	3/8"	-	-
10	-	3/8"	$rac{1}{2}$ ff	$\frac{1}{2}$ tt
11	3/4"	3/4"	3/411	3/4"
12	$\frac{1}{2}$ n	3/8"	3/8"	3/9"
13	3/4"	3/4"	1,11	1 11
14	3/4"	3/8"	3/8	3/8"
15	3/4"	1 11	1,11	3/4"
16	<u>1</u> n	Ţn	Ť II	-

Maximum Joint Extensibility 2 3/4"

The top of the pipe at the outlet has spalled off and is exposing the prestressed wire. This should be repaired.

Preparation - All loose concrete should be chipped off. The prestressed wire should be thoroughly cleaned. Do not hit wire during chipping process, the wire is under tension.

Repair - Use eithe the products listed in the report for Namticoke Site 9A or Dural 207. Follow manufacturers recommendations

Plunge Pool OK
Drainage system is not flowing

The embankment and emergency spillway are OK

Dana C. Chapman

OPERATIONS & MAINTENANCE 1980 REPORT BROOME COUNTY SOIL & WATER CONSERVATION DISTRICT

PL-566 Sites

- 1. Little Choconut #1
 - Mowed dike and emergency spillway
 - Removed debris from riser and pool area
 - Operated gate
- 2. Little Choconut #1A
 - Mowed dike and emergency spillway
 - Operated gate
 - Removed debris from riser and pool area
- 3. Little Choconut #2
 - Replaced stone-lined waterway installed 482 tons
 - Removed sediment from pool 150 c.y.
 - Mowed dike and emergency spillway
 - Debris removed from riser and pool area
 - Operated gate
- 4. Little Choconut #2A
 - Repaired barbed wire fence
 - Mowed dike and emergency spillway
 - Operated gate
 - Removed debris from riser and pool area
 - Replaced gate
- 5. Little Choconut #2B
 - Mowed dike and spillway
 - Operated gate
 - Removed debris from riser and pool area
- 6. Little Choconut #2C
 - Mowed dike and spillway
 - Operated gate
 - Repaired fence
 - Installed gate on access road
 - Removed debris from riser and pool area
- 7. Little Choconut #2E
 - Mowed dike and emergency spillway
 - Operated gate
 - Removed debris from riser and pool area
- 8. Little Choconut #3C
 - Mowed dike and spillway
 - Operated gate
 - Repaired gate
 - Attempted to unplug 6" drain into riser, will require pumping dry and dredging to uncap pool end

ENCINEERING OPERATIONS AND MAINTENANCE INSPECTION REPORT

	VATERSHED	SITE NO. DATE OF INSPECTION / / / DATE OF LAST INSP.
•	SPONSOR WITH OPERATIONS AND MAIN	MENANCE RESPONSIBILITY ASSESSED S (CC)
	0 & H 1T2MS	SATISPACTORY/UNSATISFACTORY - EXPLANATION
•	1. VEGETATION a.) Howing b.) Reseeding a.) Pertilising d.) Excessive other uses	
1 '	2. FENCING a.) Intact and Punctional b.) Debris in Pence e.) Gates, Locks	(e) (c)
·	1. EXERCENCY SPILLWAY 4.) Erosion b.) Excessive Seepage c.) Sedimentation d.) Obstructions in Chamel e.) Slips, Slides; Location	
1	4. Edhandert a.) Cracking, excessive settling b.) Erosion e.) Seepage 4.) Other Demage (Rodents)	tiling /b.) /b.) /c.)

hsatisfactory - Explanation						
SATI SFACTORY/UNSATI SFACTORY	4.00	(a)	/a.)	/ P.		
O & H ITEMS	 S. RESERVOIR AREA a.) Undestrable Vegetation b.) Cut or Fallen Trees c.) Debris/Slash d.) Sedimentation 	6. OUTLET CHANNEL a.) Sedimentation b.) Cutting and Scouring e.) Woody Growth	7. ROCK RIPRAP 4.) Undermining b.) Adjacent Channel Scouring c.) Deterioration	8. TRASH RACKS, GRATINGS a.) Accumulated Debrie b.) Broken or Hissing Parts c.) Galvanising or Paint	9. OTHER SPECIAL STRUCTURES b.) Diversions b.) Access Roads c.) Waterways d.) Other, list	10. PRINCIPLE SPILLMAY a.) Riser 1.) Condition of Concrete 2.) Seepage and Cracks 3.) Condition of Transition

12. Purp SYSTEMS General condition report, continued:	
13. SAFEIT List all Basards present: (including broken guards, rails, rope swings, diving boards on risers, evidence of pollution, garbage)	11
RECOMENDED REPAIRS AND METHOD OF REPAIRS () LEGAL () LIGHT CONTROL of LOCAL () LIGHT CONTROL OF LOC	1 7
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APPENDIX E

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APPENDIX F
DRAWINGS

FINCH HOLLOW, LITTLE CHOCONU WATERSHED PROJ

FLOODWATER RETARDING DAM

DRAINAGE AREA TOTAL STORAGE (TO EMERGENCY SPILLWAY CREST) WATER SURFACE AREA HEIGHT OF DAM VOLUME OF FILL

> BUILT UNDER THE WATERSHED PROTE FLOOD PREVENTION ACT

> > BY

COUNTY OF BRUCME

WITH THE ASSISTANCE OF THE SOIL CONSERVATION SERVICE

OF THE

U S DEPARTMENT OF AGRICULTU

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SHEET 1 - COVER SHEET

SHEET 2 - PLAN OF STORAGE AREA & FILL PLACEMENT

SHEET 3 - PLAN OF STRUCTURAL WORKS

SHEET 4 - PROFILES

SHEET 5 - DRAINAGE SYSTEM CETAILS

SHEET 6 - PROFILE OF PRINCIPAL SPILLWAY

SHEET 7 - PROFILE OF PRINCIPAL SPILLWAY

RISER STRUCTURAL CETAILS

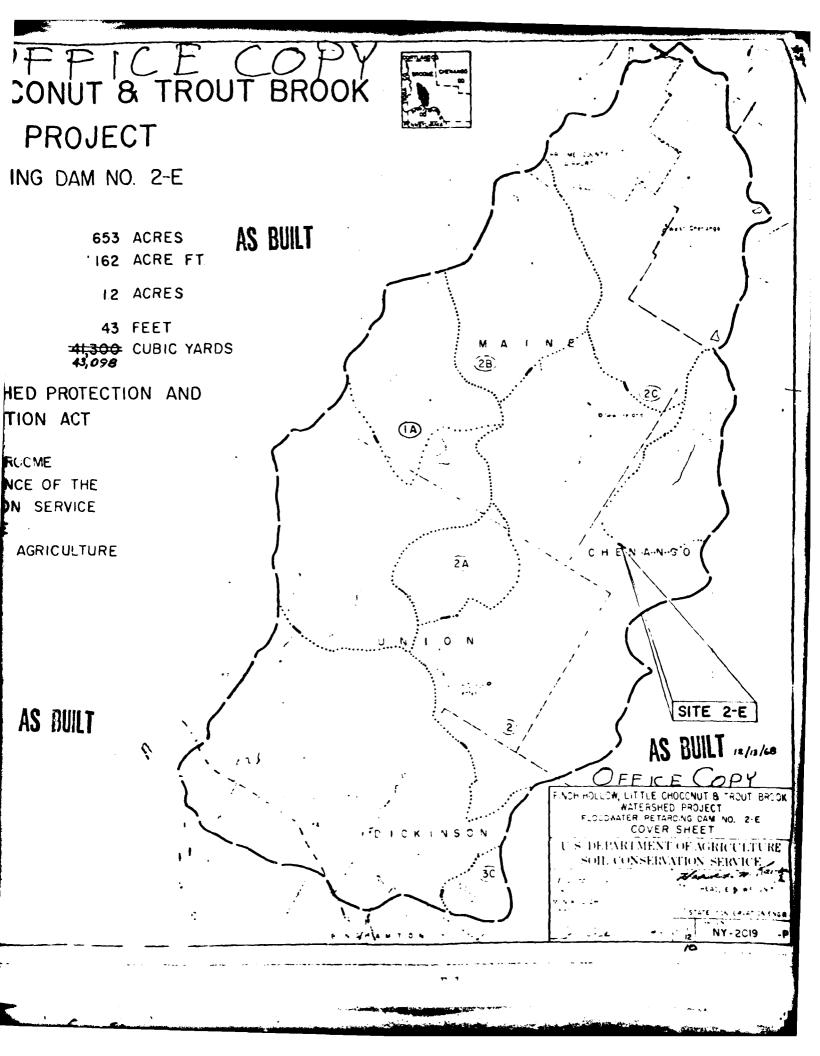
SHEET 9 - TRASH RACK, VENTING TUBE & ANIMAL GUARD

SHEET TO - POND DRAIN INLET DETAILS

SHEET 11 - COLLAR, CRADLE, BEDDING, BENT, & MISC DETAILS

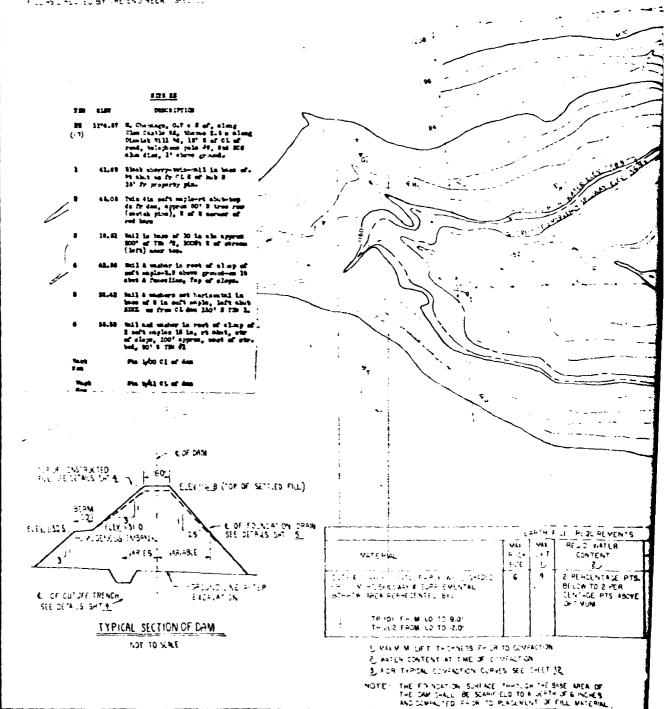
SHEET 12 - LOGS OF TEST HOLES

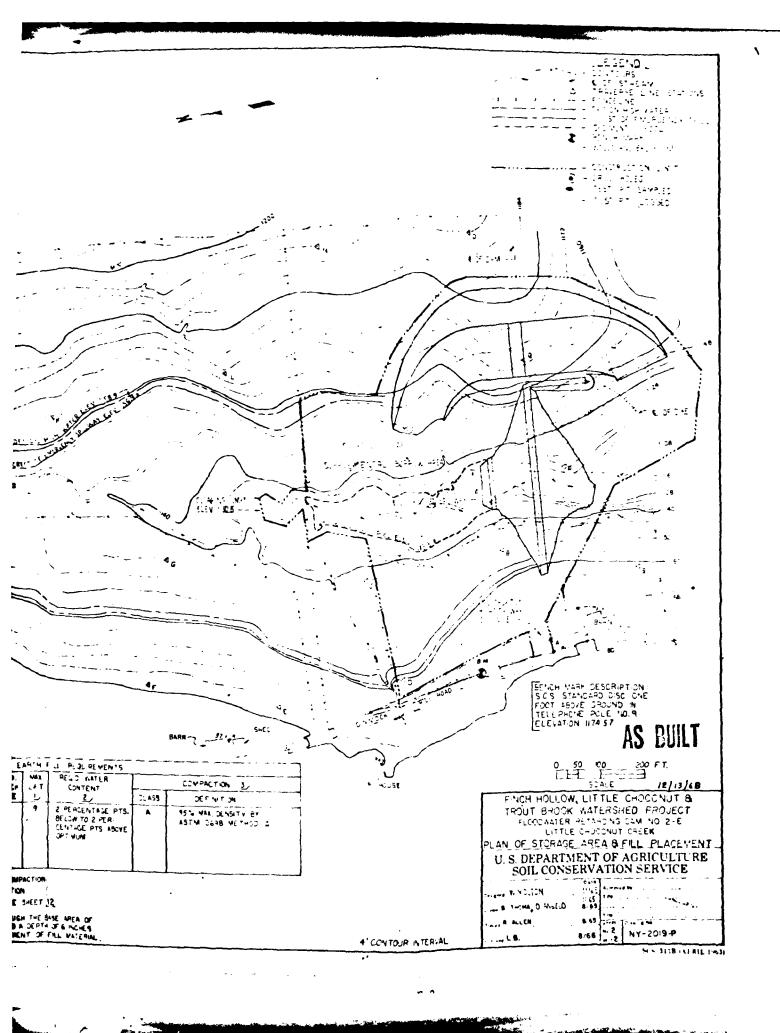
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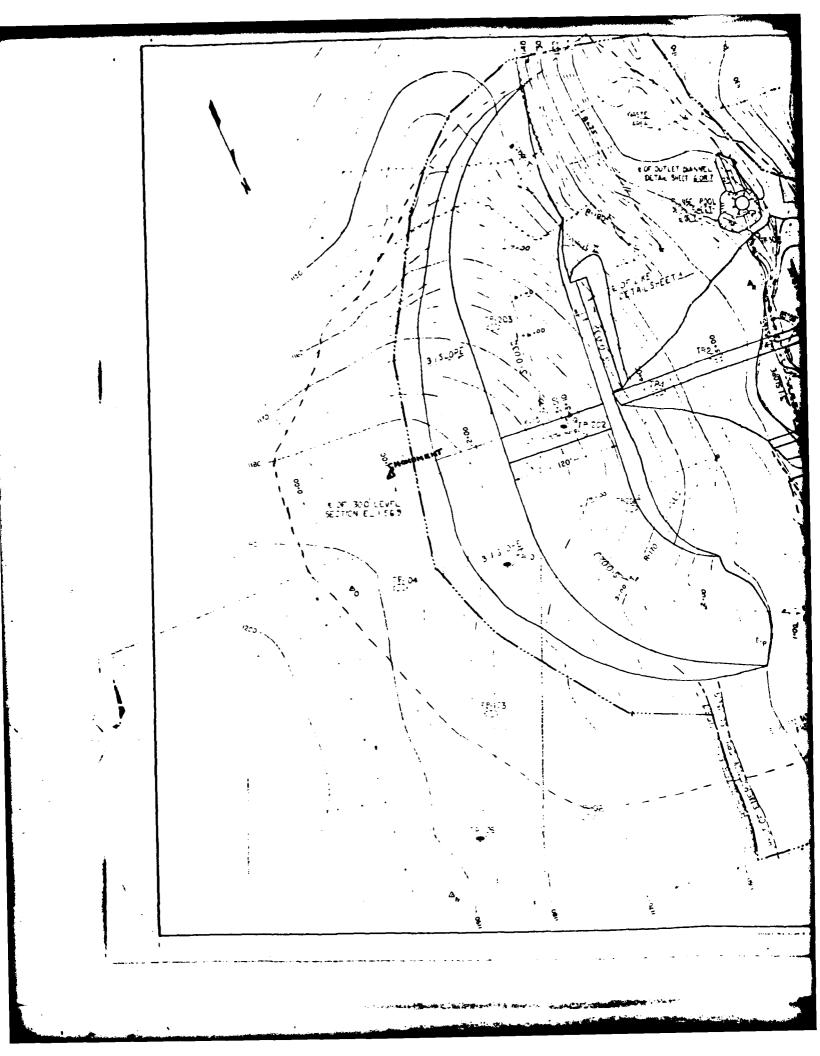


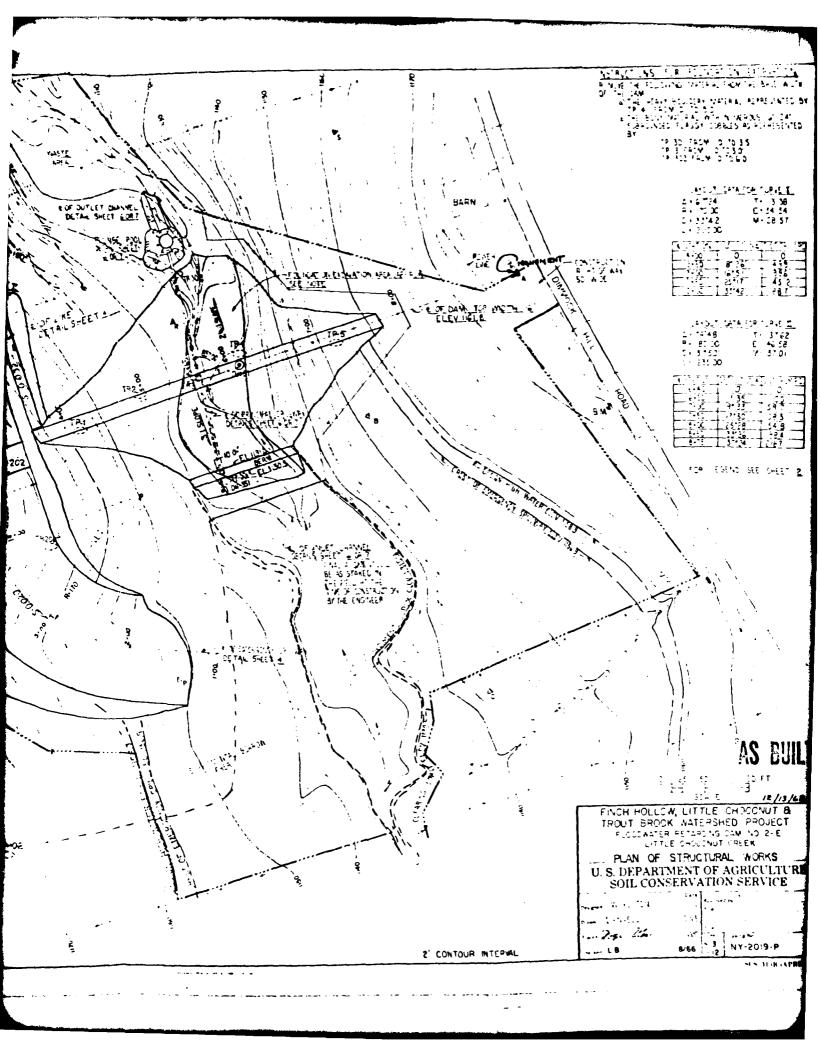
GENERAL NOTES

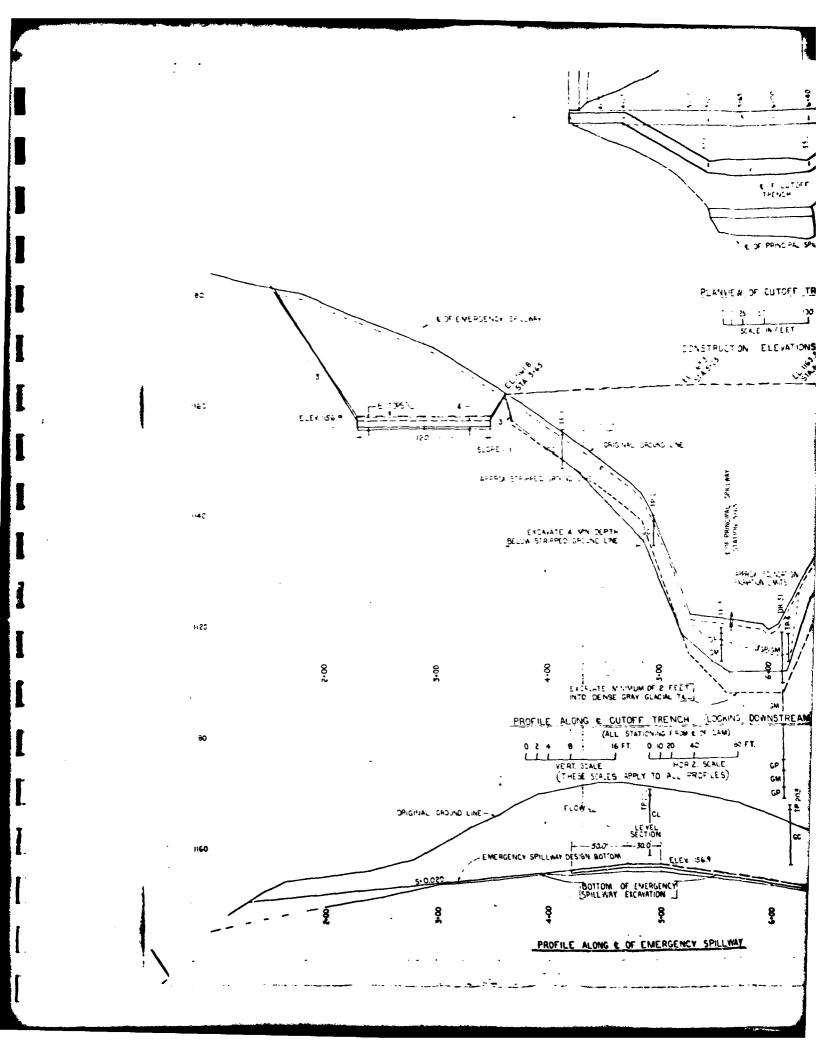
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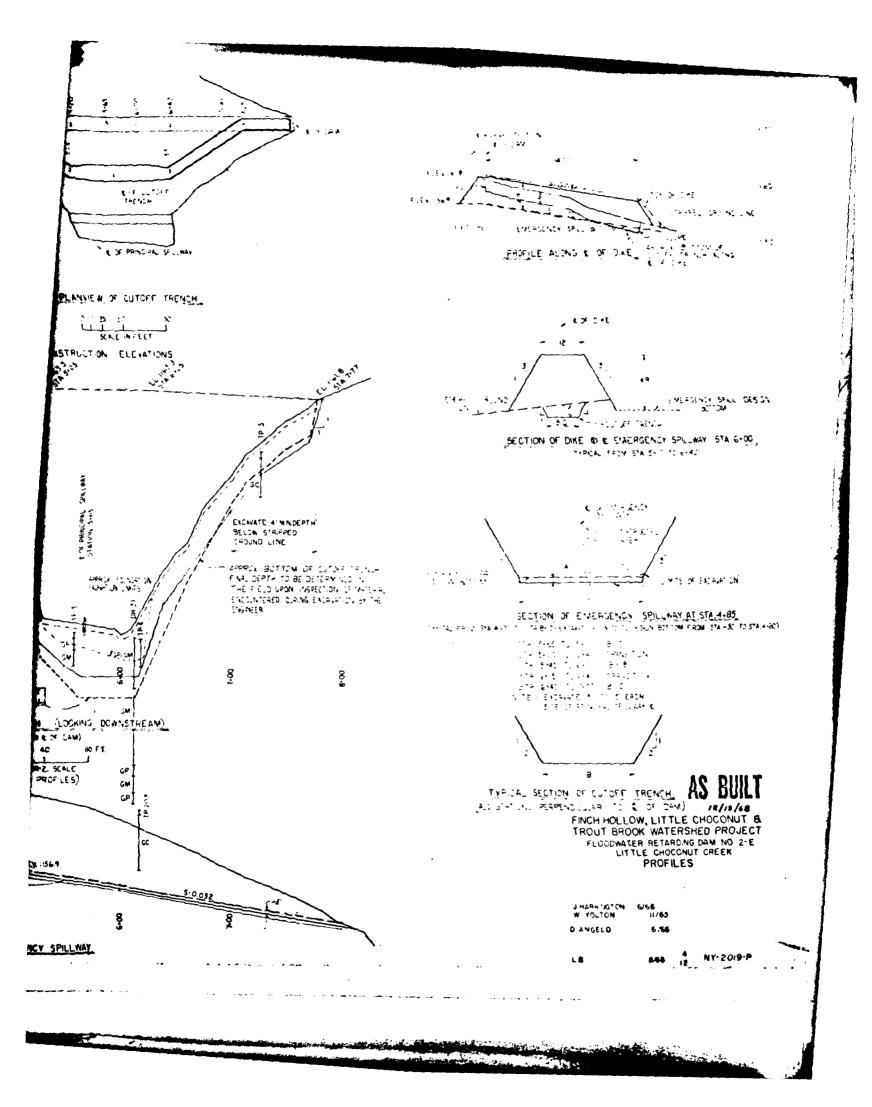


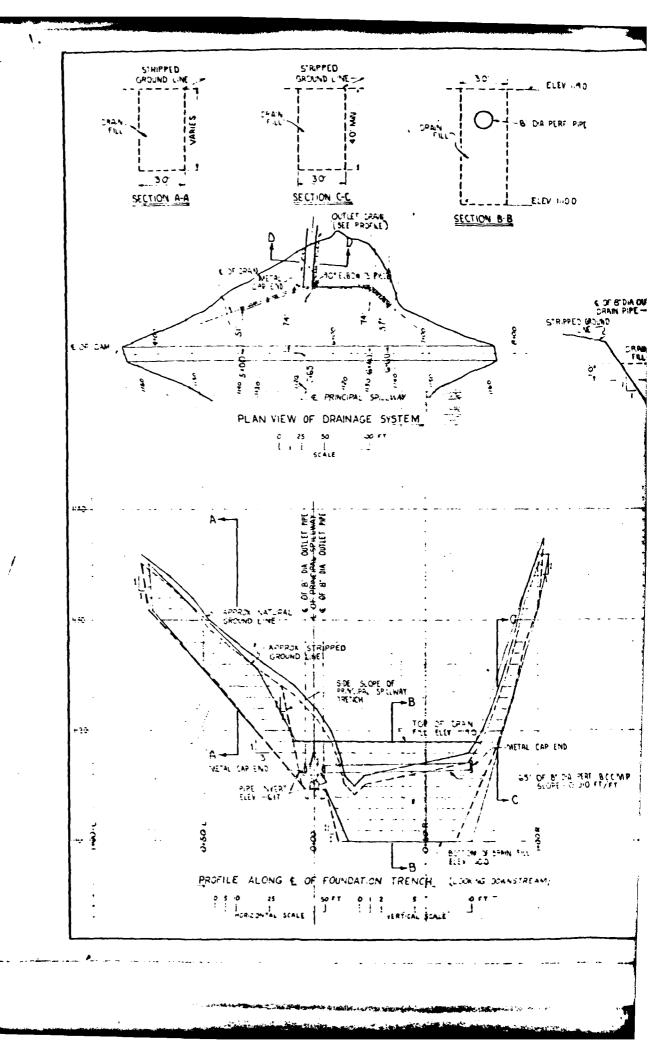


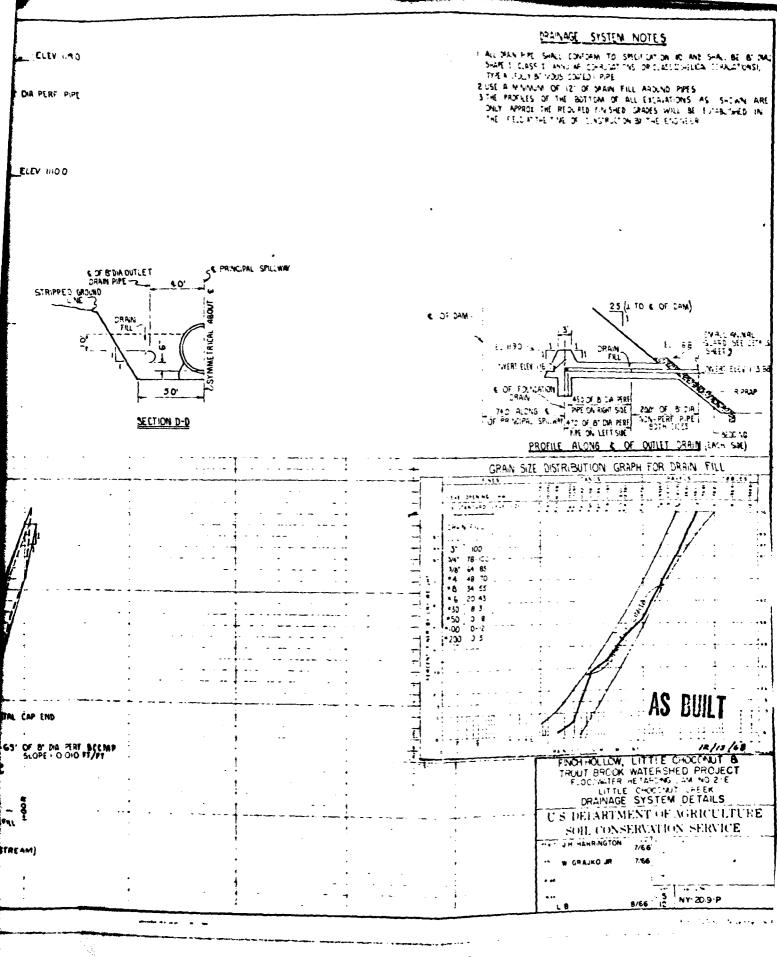


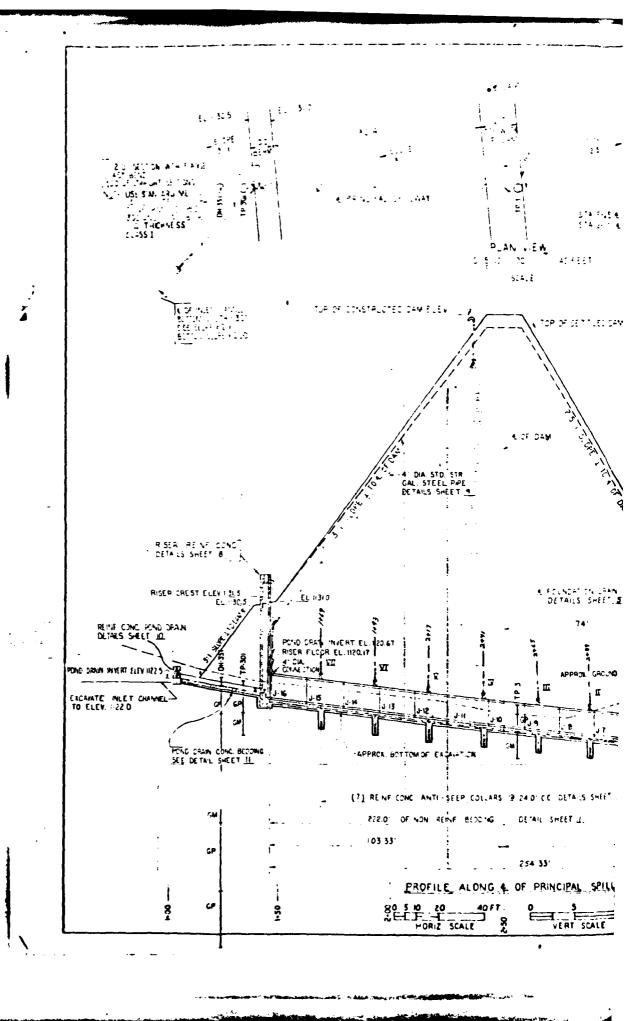


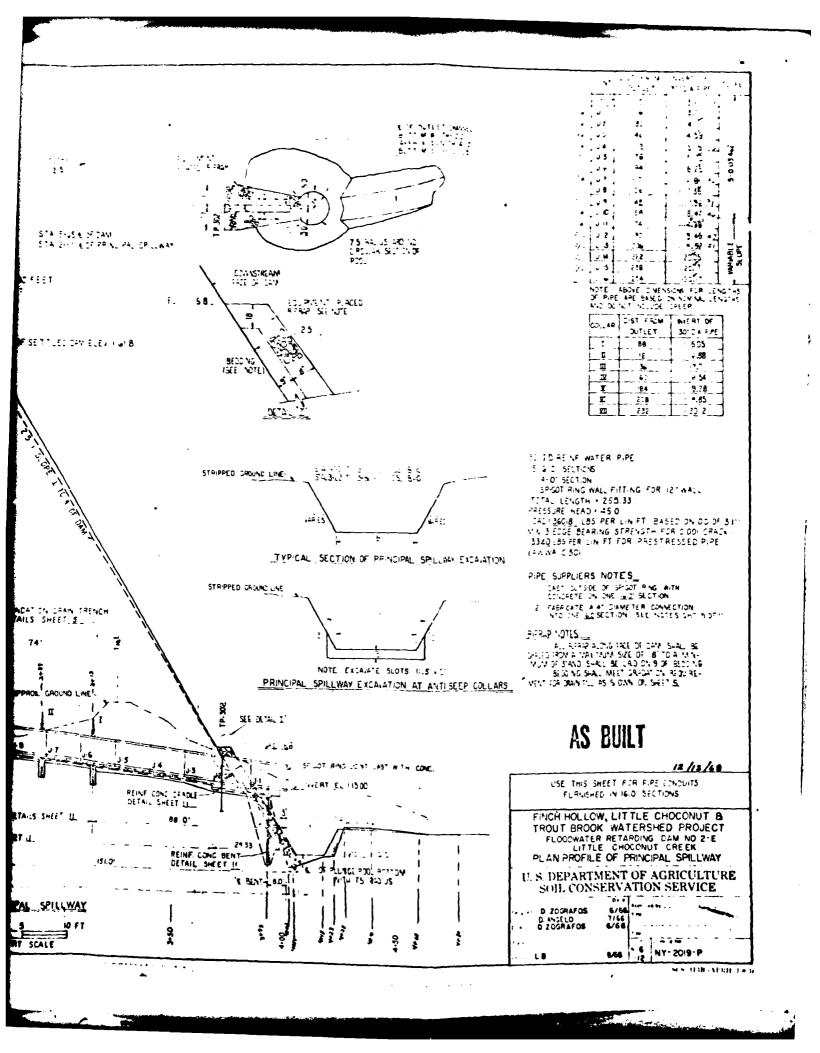


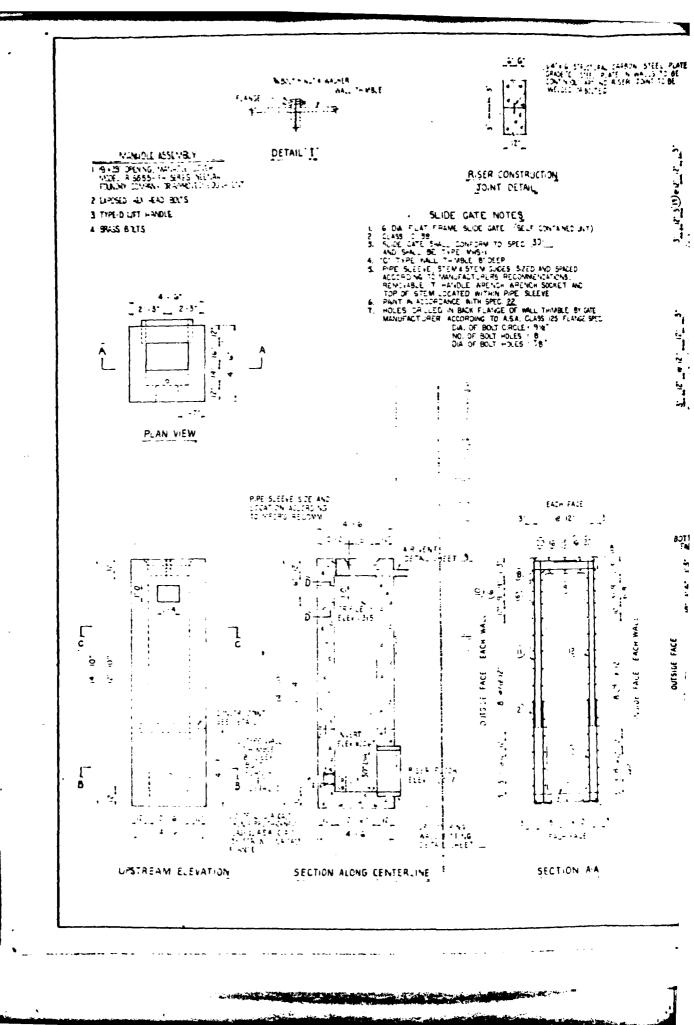


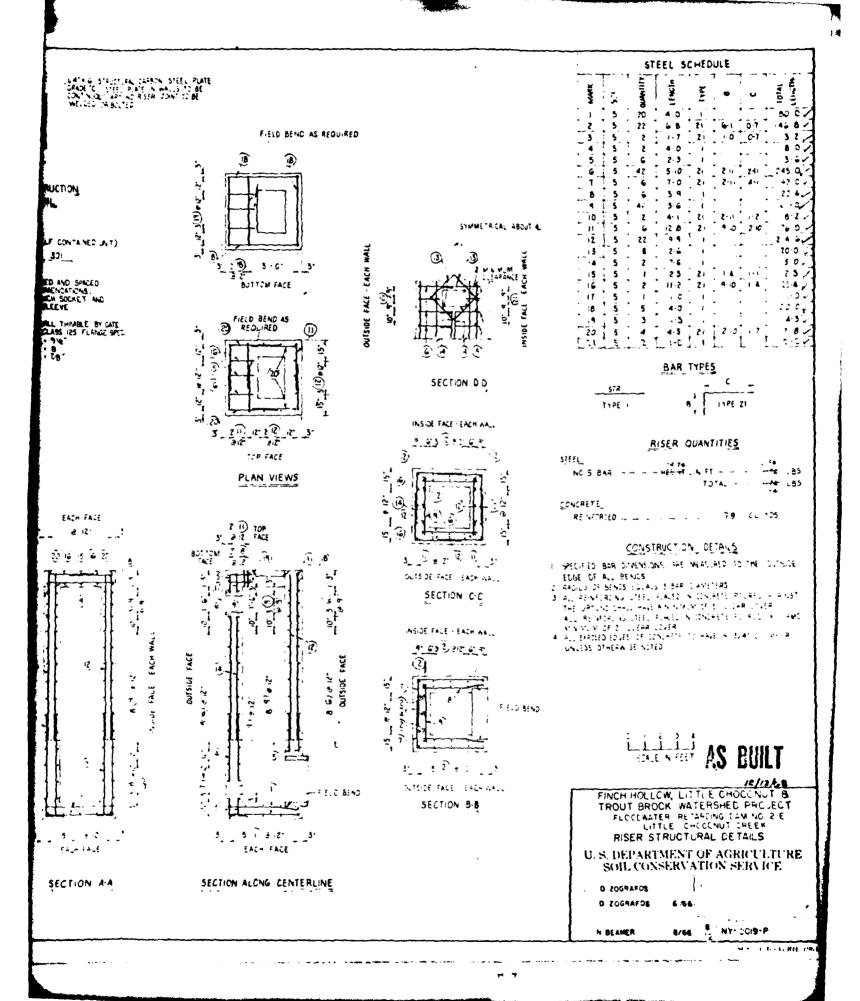












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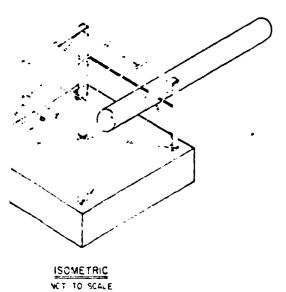
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SECTION 8-8

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FINCH HOLLOW, LITTLE CHOCONUT & TROUT BROOK WATERSHED PROJECT FLOODWATER RETARDING DAM NO 2-E LITTLE CHOCONUT CREEK POND DRAIN INLET DETAILS

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